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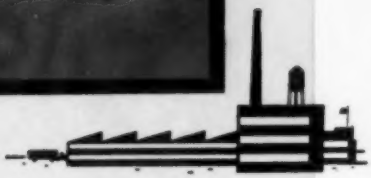

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Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Field Editor

July, 1961
Vol. XXXVII, No. 9

BPA

A monthly magazine for company executives, production superintendents, process engineers, chemists, purchasing agents, paint shop and finishing department foremen of industrial plants where product surface cleaning and painting are major operations in the manufacture of parts and products of all kinds.

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West Coast Editor
CHAS. R. BROWN

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Accepted as Controlled Circulation Publication at Indianapolis, Indiana

37 THIRTY-SEVENTH YEAR OF PUBLICATION

No Compressed Air Moisture. A new valve that automatically and continuously removes water and oil condensation from compressed air lines without causing pressure drop has been perfected by the Barger Mfg. Co., 204 Foshay Tower, Minneapolis 2, Minnesota.

The new product, called the "Moisture Minder," can be readily attached to existing compressed air systems without cutting lines. According to the manufacturer, installation is inexpensive and is performed in a matter of minutes. It will not balance off and bleed air from the system. The valve takes advantage of the pressure in the system to perform the function of removing condensed moisture from the air system.

Useful for industrial compressed air lines

* * *

Puts Out Fires Fast. A new dry chemical extinguishing agent, effective on Class A, B and C fires, is offered by Ansul Chemical Co., Marinette, Wisc. Known as "Foray," it is offered in cartridge-type extinguishers; can be obtained in any one of three sizes, in either cartridge or stored pressure-type extinguishers.

* * *

Collapsible wire mesh boxes for use on production lines are now available from Republic Steel Corp., Berger Division. The wire boxes, which fold to pallet height for easy storage, are available with capacities of either 2000 or 4000-lbs.

* * *

Safe Toxic Solvent Can. A new dispensing can for toxic solvents protects the user from accidental contact with toxic liquids used in cleaning and finishing operations, and eliminates the toxic vapor hazard by means of an automatic, self-sealing well. By preventing solvent vapors

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METACLEAN No. 268 surpasses the cleaning power of old-fashioned cleaners that require temperatures of 160° to 180°. This non-corrosive alkaline cleaner removes oil, chips and other soil from metal—at room temperature. It eliminates fire hazards—is more effective than volatile cleaners such as naphtha and kerosene, etc.—and it is one of the lowest priced metal cleaners available.

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CORPORATION
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from escaping, the Toxic Solvent Can also reduces evaporation losses of expensive solvents.

To moisten a small swab or brush, the user places it in the plunger type well and depresses the assembly with one or two fingers. This dips the brush into the solvent. Upon release of the spring loaded plunger assembly, the excess liquid flows back into the can and the liquid opening is resealed.

* * *

Nox-Rust Clear-Pak, the treated Mylar, protects packaged ferrous metal parts and components from rust and corrosion by releasing an invisible vapor into the atmosphere within the package. The package is plate-glass clear, allowing easy identification of packaged items. It can also be printed with parts numbers or other identification for military and industrial uses, or with sales messages.

Available in a variety of roll and pouch sizes, Nox-Rust Clear-Pak can be processed by users on automatic printing and packaging machines. The heat-sealable VCI-Mylar combination keeps dust and dirt from parts.

* * *

Joint Sealer; Crack Filler. A new rubber asphalt joint sealer and crack filler has been developed by the U. S. Chemical Co., Inc., of Lincoln, Nebraska. "Join Seal" offers a fast, economical way to seal out moisture, drafts, insects and dust. It bonds well to concrete, steel, masonry and other surfaces, and remains flexible over a long period of time. Because it blends rubber and asphalt, it has a flexible quality which makes it possible for the material to stretch as joints expand, and to withstand moisture. This flexibility will make it last much longer than materials which have a

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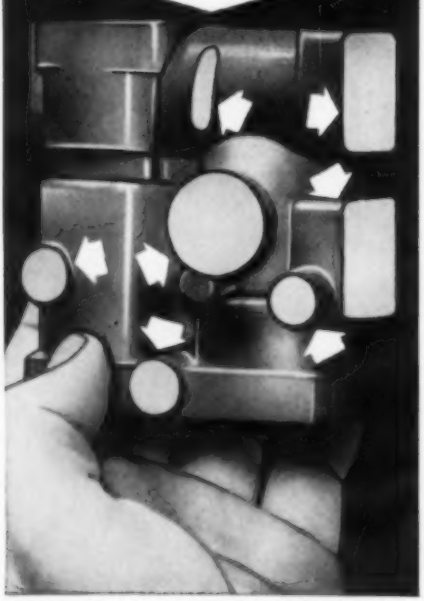

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tendency to shrink and harden with age.

This sealer comes in a standard tube which fits ordinary caulking guns and has a tip which can be cut to desired width of application. The color is black. By using aluminum paint first, it can be painted over in any desired color.

* * *

Plastic Caps and Sleeves. Protective Closures Co., Inc., 2207 Elmwood Ave., Buffalo 23, N. Y., announces that it can now provide molded plastic protective caps and sleeves in large sizes at low cost, even when quantities are relatively small. Made of tough, flexible, unbreakable polyethylene, they provide a seal against dust and moisture and protect against impact damage during storage, process or transit. They can also be used as masks.

* * *

Bronze-Plastic Repair Putty. Devcon BR, a new repair compound consisting of 80% bronze and 20% plastic, is now available from Devcon Corp., Danvers, Mass. It is simply mixed with a hardening agent, supplied with each unit and then applied. The hardener mixture hardens in about two hours, without the use of heat or pressure. It bonds to iron, bronze, steel, aluminum, brass, wood, glass and many other surfaces.

* * *

Seals Concrete Floors. A clear, synthetic resin sealer which stops dusting by penetrating and sealing the pores within the concrete is fully described in the Horn Duocrex "C" catalog offered by A. C. Horn Companies, Division of Sun Chemical Corp., 2133 85th St., North Bergen, New Jersey.

Because...	**SYNFLEX** is lighter	**SYNFLEX** is economical
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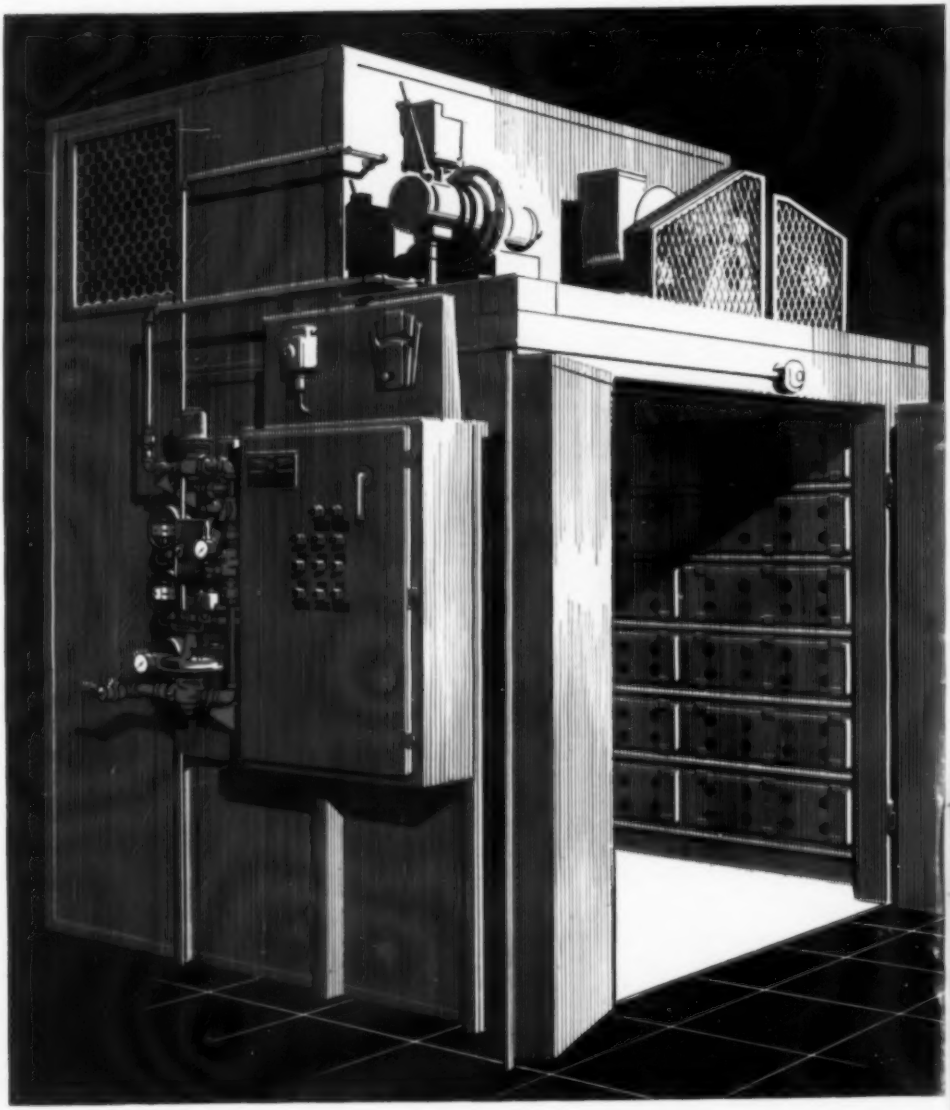
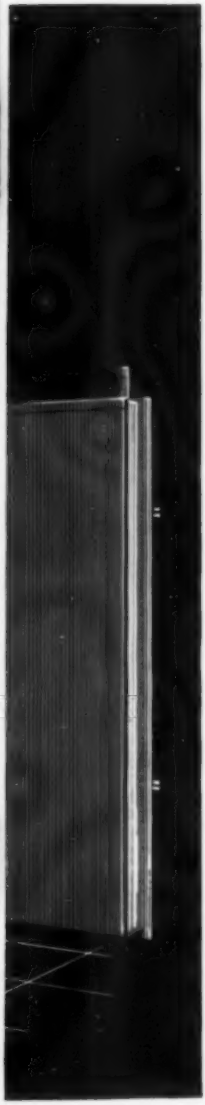


heat *for baking, drying, and dehydrating*



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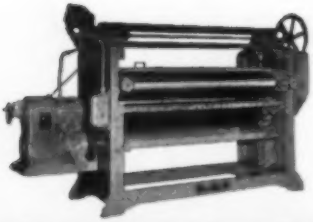
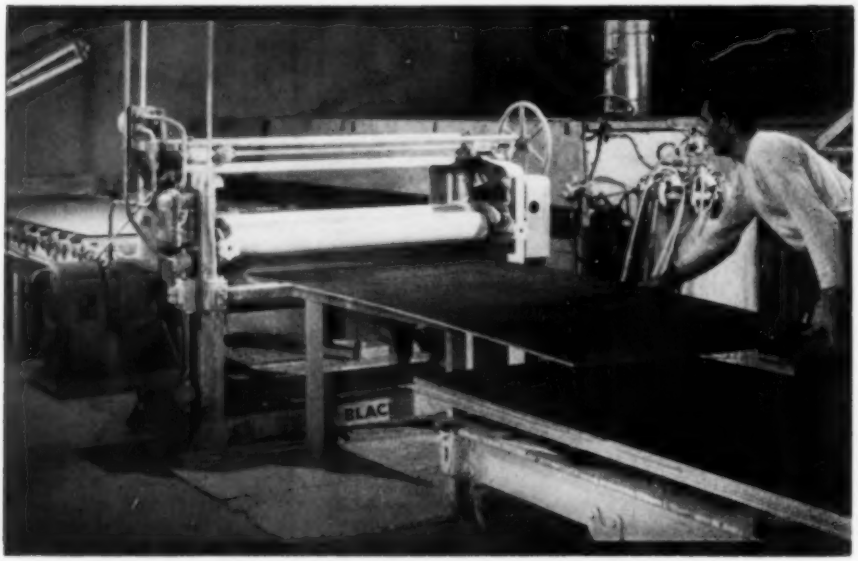


Black Brothers heavy duty roller coaters apply paints, lacquers, finishes, sealers, sizes, varnishes, stains, waxes, fillers, protective coatings, base coats, drawing compounds and other coatings to flat work such as wood, metal, plywood, composition board, hardwood, plastic, cardboard, cement board, etc.



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Detecto Scales, famous for durability since 1900, keep their lustre-new appearance for years. The secret's in the finish. The mar-resistant surface of Detecto's newest airline baggage scales (shown) is green Kromotex Aluminum Enamel, made with Alcoa® Pigments by Standard Toch Chemicals Co., Staten Island, N.Y.

Available in a wide range of colors, Standard Toch aluminum finishes protect an impressive list of leading products—cameras, typewriters, air conditioners, sewing machines. Successful manufacturers know that appearance clinches the sale. If *your* product needs durability and better appearance, test an aluminum finish made with Alcoa Pigments. You'll be pleased with results.

Alcoa does not make paints, but paint manufacturers, working with Alcoa Aluminum Pigments, have developed a wide range of metallic finishes that give extra protection, build big sales. Get all the facts from your paint manufacturer, or write Aluminum Company of America, 1757-G Alcoa Building, Pittsburgh 19, Pa.

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Finishing Lighting Fixtures

Fluorescent lighting fixtures, hanging from overhead conveyor, are about to enter metal cleaning and phosphatizing setup.

MANY CHANGES have taken place in the fluorescent lighting fixture industry. There was a time when fluorescent lights were used only indoors. Now they are in service for street lighting, to illuminate shopping centers and malls, parking lots, swimming pools and recreation areas. The finish coating on lighting fixtures now has a dual utility function: It must permanently aid in light reflection and it must protect the fixture effectively against the elements in all sorts of climates.

Fluorescent fixtures are now made of both cold-rolled steel and aluminum alloy, depending upon the buyer's preference and/or specifications developed by municipal governments, highway engineers, architects, etc. At the manufacturing plant the use of both aluminum alloy and steel necessitates slight changes in the surface preparation of the two metals for painting.

Metal Cleaning and Surface Preparation

For steel fixtures a 5-stage cleaning operation is usually indicated. This may include a hot alkali cleaning solution, a hot water rinse, a mildly hot phosphatizing solution,

a water rinse at room temperature, a mild chromic acid solution and passage through a dry-off oven.

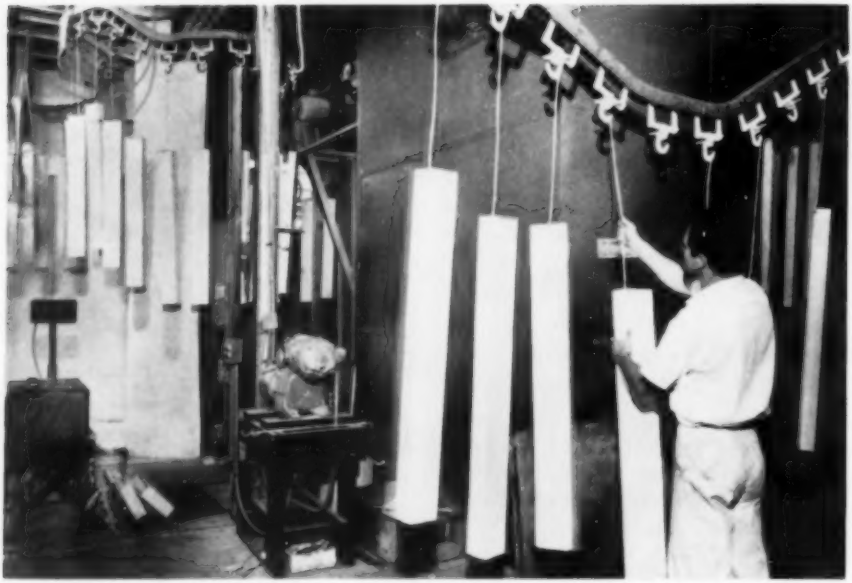
For aluminum alloy fixtures a mild alkali cleaning solution is generally used in the first stage, an aluminum etchant in the third stage and finally drying in an oven —say two minutes at 300° F. The parts must cool for a few minutes before they are ready for spray painting.

Automatic Spray Painting; Baking the White Enamel

In many of the factories today the spray painting setup includes both manual spraying and electrostatic application. On large production runs the manual spraying is only used as brief supplemental work to reach one or more small intricate shielded areas which otherwise might not receive a normal full thickness coating in the automatic electrostatic setup. A coat of white modified alkyd - resin - base enamel is the finishing material that is frequently used for lighting fixtures. Whatever kind of coating is used must have excellent adhesion to the metal, it must be mar-

Fluorescent lighting fixtures are generally given a smooth, clean, durable baked-on enamel finish, one that will not chip, check, craze or crack—even after years of severe service.

The automatic electrostatic spray painting zone, with ceiling mounted disc, is at right.



Electrostatic painting zone is at left; exit of baking oven is at the right.

resistant and durable, and retain its whiteness over a long period of time.

In conveyorized electrostatic application the work holders and parts being painted are rotated throughout the painting zone.

Upon leaving the electrostatic painting zone the coated parts usually travel for two minutes to flash-off or begin to air dry before entering the oven. Leaving the oven the baked enameled parts cool as they travel to a transfer station where they are removed, inspected and are then hung on an assembly conveyor.

The function of a manufacturing organization is to make a profit by processing, fabricating or assembling products which meet a demand.

Airless Spray Equipment Catalog

A complete catalogue of all airless spray equipment furnished by The DeVilbiss Co., Toledo 1, Ohio, is now available.

The catalogue lists specifications and information on the new medium production pump for single gun operation, including available accessories, the heavy-duty pump for multiple gun operation, including portable and tank mounted models, spray guns, including pole and automatic guns, the range of spray caps available, and types of hose and connections.

For more data, circle 17 on colored card.

Allied Research Moves Fenwick

Allied Research Products, Inc., Baltimore manufacturer of metal finishing equipment and supplies, announces that Roger Fenwick, former Cleveland representative, has been moved to the Boston territory. Mr. Fenwick will reside in the Boston area, but will work in close contact with Allied's new service laboratory at 625 Bostwick Ave., Bridgeport, Conn.

The READER SERVICE *Department of*

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For further information on what manufacturers have to offer —literature, products, supplies, etc., mentioned in the editorial departments, use the "Reader Service" return card in the rear section of this issue, page 120.

Industrial FINISHING

July 1961, Issue

Reader Service Department

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FEATURES

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LOW MAINTENANCE — no bulbs or tubes to burn out or break

COMPLETE FLEXIBILITY — adaptable to any conveyor or system

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FREE! Your copy of The Story of MODULAR INFRA RED OVENS

INFRA-RED SYSTEMS INC. 240 ROUTE 23 RIVERDALE, N. J.

For more data, circle 159 on colored card.

By C. H. Wright
Project Engineer

Spraying small parts with an electrostatic hand gun. The holders revolve as they travel past the spraying zone.

Photographs courtesy of Chainveyor Corporation.

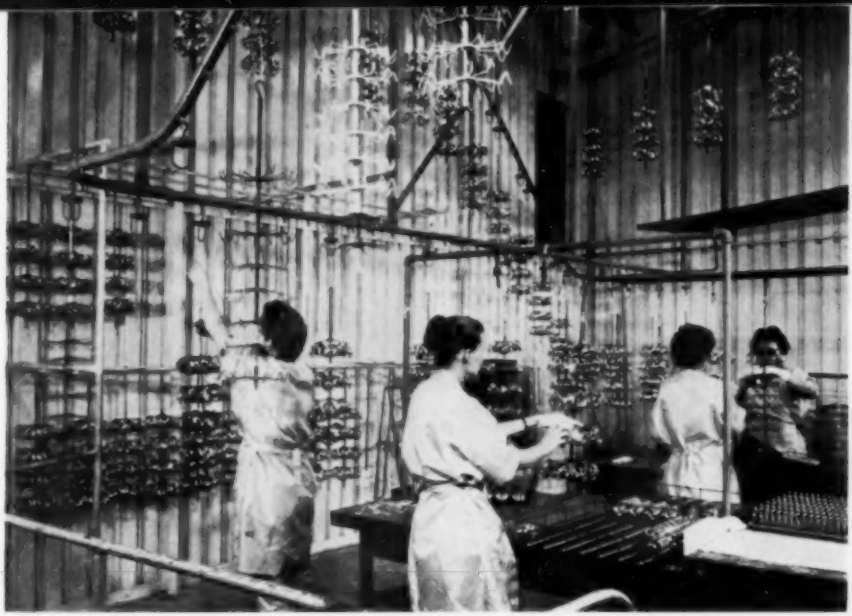
Spray Finishing - Baking *Operations Modernized*

ALWAYS searching for new methods and techniques to improve both our production and our products, we at Crown City Plating Co., El Monte, Calif., have, over the years, subscribed conscientiously to a continuing program of real modernization. We believe that it is vital to our being competitive with other firms and essential to customer satisfaction.

At our plant, where we specialize in automatic and hand chromium plating, brass and gold plating, automatic and hand buffing, and are equipped for clear and color anodizing, engine turning, silk screening and painting, we recently made one of our important strides toward shop efficiency. For us it put real teeth in the word "modernization."

We Put in a 400-ft. Overhead Conveyor Line

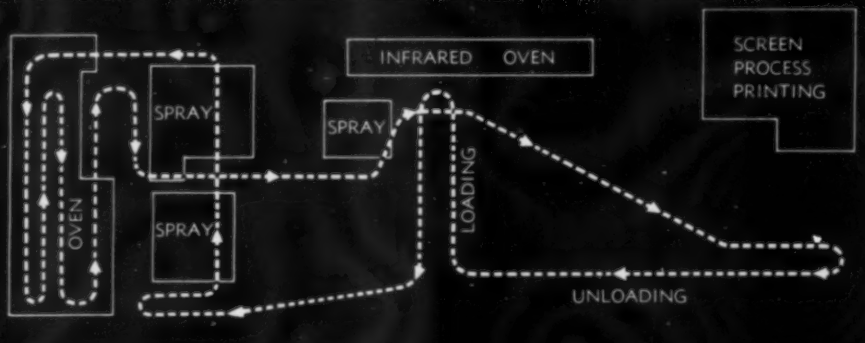
We installed a 400-ft. overhead conveyor system in our paint department. This is modernization, especially when you've seen the system improve your own plant's quantity and quality of output so extensively. This major innovation was complemented by two additional improvements.



Parts for finishing are clustered on special hangers and then hung from carriers which move along by overhead conveyor toward the painting area.

The department's electrostatic and hand-spray painting room was partitioned off from the work preparation section by a steel wall. Both areas were then sealed from each other and from the rest of the plant, thereby keeping the painting facilities free from outside dirt, dust and other objectionable elements. This desire for absolute cleanliness in the department was further aided by the installation of four blowers which filter incoming as well as outgoing air and afford temperature control throughout.

For some time we had been aware that operating facilities and conditions in our paint department were such that on numerous occasions we had to turn down jobs because we couldn't profitably handle them. Working areas had be-



come too congested for practical handling requirements. Also, we saw that our scope of materials handling was taking on a diversification which demanded a more rapid means of output. These were problems of major import, and ones that needed solving in one way or another.

We Consulted Experts; Modernization in Five Days

During the speculative stages of attempting to come up with the answer, we gave thoughtful consideration to a number of suggestions and we consulted several experts for information. The automatic overhead conveyor system was decided upon, as it provided what seemed to be a sensible solution. The entire modernization effort was accomplished in a surprisingly short time. The conveyor people from Los Angeles installed their conveyor system in just 3½ days. Total modernization was completed in only five days.

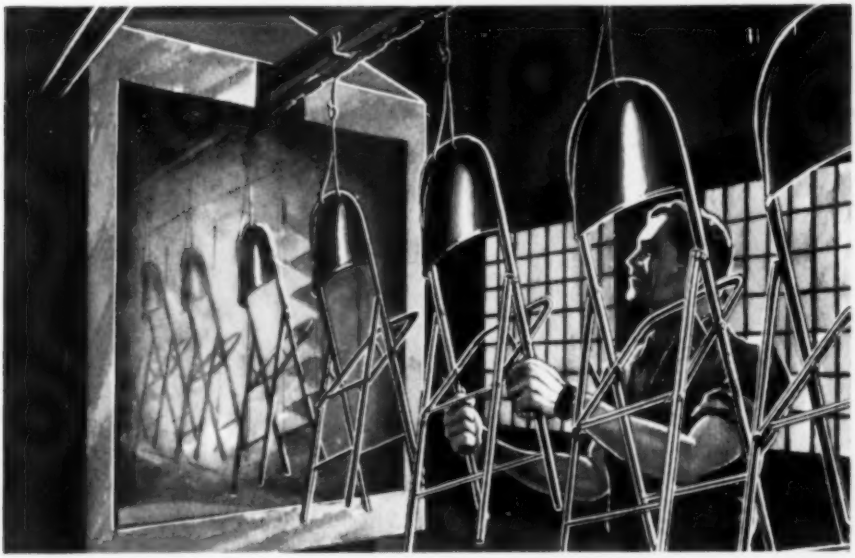
Now, with our modern overhead conveyor system working efficiently, we have increased production 100% on some jobs. Parts now move into the paint department and are handled only twice—once when

Baked-finished parts leave the oven and drop to work level for inspection and unloading.

For the best in pressure spray washing

ask Oakite

OVER 50 YEARS CLEANING EXPERIENCE • OVER 250 SERVICE MEN • OVER 160 MATERIALS



Even the highest spray washer pressures won't foam Oakite 161 alkaline detergent

Turn on the highest pressures to speed cleaning—you won't get any foaming problems with Oakite 161. Nor any etching problems, either. This alkaline detergent is specially designed for *safe* pressure spray washing of any metal —aluminum, white metals, brass, steel.

And it does a thorough job. Oakite 161 blasts off identification inks, grease, oil and shop soils . . . gives a completely clean surface for inspection or final finishing. Costly? Not at all. Extra long solution life and low concentrations assure low per-unit production costs.

One of a complete line of Oakite products for spray washers, Oakite 161 is complemented by heavy-duty solvent cleaners, moderate to light-duty alkaline materials. Ask the Oakite man to help you make the choice that's right for your washer . . . right for your products. Or send for Bulletin F-9773. Oakite Products, Inc., 32F Rector Street, New York 6, N. Y.

it PAYS to ask Oakite

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years' leadership in industrial cleaning

For more data, circle 160 on colored card.

they are loaded on the conveyor hangers or carriers, and again when they are unloaded and made ready for shipment. Automation does the rest, taking parts through their necessary finishing stages, and doing so at a constantly steady flow.

Conveyor System Variations; Only One Drive Unit

Our chain conveyor system includes no less than eight variations in horizontal operation. All dips and rises are at a 45° angle from horizontal; curves are of 12 or 16-in. radius. The system's rotating carriers are positioned on 12-in. centers. The entire line is powered with one drive unit which moves carriers along at the rate of from three to 9-ft. per minute, depending on the timing desired. This particular conveyor handles loads ranging from ¼-lb. to 20-lbs.

Use of the conveyor helps us to minimize the floor space required because it conforms closely to structural contours and because it is perfectly engineered for our individual needs. It has supplied us with absolutely trouble-free service since installation over a year ago, and it has substantially reduced the number of rejects. [END]

Diversey Buys Canadian Firm

Purchase of Heather Chemical Products, Ltd., Toronto, by the Canadian subsidiary of The Diversey Corp. has been announced.

The 7-year-old Heather company manufactures industrial metal cleaners and metal finishing compounds. Heather will operate under its own name as a wholly owned subsidiary of The Diversey Corporation (Canada) Ltd., which was formed by Diversey in 1939.

With acquisition of the Toronto firm, Diversey now has four plants in Canada. The others are located at Montreal, Clarkson and Calgary. Diversey also has plants and offices overseas in Europe, Latin America and Australia.

Grand Rapids Varnish Corp. Elects Officers

The Board of Directors of the Grand Rapids Varnish Corp., meeting on Monday, June 19, took the following action:

Elected Mr. Charles F. Anderson as a Director of the Company to fill the vacancy resulting from the death of Mr. Howard C. Lawrence. The other Directors are Mr. Harry J. Brown, Mr. Myron DiVittorio, Mr. Joseph A. Hager, Mr. George B. Kingston and Mr. Zeno H. Nelson.

Joseph A. Hager.

The Board elected Mr. Hager as President and Director of Sales; Mr. Anderson as Treasurer and General Manager; Mr. Frank E. Ehrett as V. P., Sales; Mr. Willis E. Martin as V. P., Works Manager; Mr. Kingston as Secretary, and Miss Nina E. Shippy as Assistant Secretary.

Mr. Hager, previously V. P. and Director of Sales, has been with the company 37 years. Mr. Anderson has been Treasurer and Comptroller and has been associated with the company 28 years. Mr. Martin has held numerous assignments with the company over a period of 29 years. His most recent assignment was Director of Technical Service. Mr. Ehrett has had 33 years experience in the coatings industry. He has been Sales Manager of the company since 1953. Mr. Kingston is a Senior member of the legal firm of Kingston, Porter & Day, and has been legal counsel to the G. R. Varnish Co. since its inception. He has served the company as Secretary since 1944. Miss Shippy has been with the company 15 years as secretary to Mr. Hager.

The Grand Rapids Varnish Corp. was founded by Wallace E. Brown in September 1915 and does an annual volume of business exceeding 8 million dollars. It has a wholly owned subsidiary company in High Point, N. C.

TOUGH

LEATHER-LIKE FINISH FROM MOROCCO GRAIN TO ALLIGATOR EFFECT...

CORITEX

- SELF-PRIMING
- IN LACQUER, ACRYLIC, VINYL, HEAT CONVERTIBLE POLYESTER, EPOXY
- AIR DRY & BAKED TYPES
- ON WOOD, MASONITE, POLYSTYRENE, ACRYLIC, OTHER THERMOPLASTICS
- ON PHENOLIC, POLYESTER FIBERGLASS, OTHER THERMOSETS
- ON ALUMINUM, STEEL & VARIOUS METALS

Field tested over a 5-year period, CORITEX . . . tough, highly abrasion resistant finish . . . imparts an attractive leather-like look. Covers imperfections in moldings and castings. Low in glare. Easily cleaned. Not a dust collector. Can be sprayed by conventional methods or electrostatically. In black, white, and all colors. Tailored to your production needs.

SEA-LAC **DURALAC CHEMICAL CORP.**
84 LISTER AVENUE, NEWARK 5, N. J.

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PAINT ARRESTORS CATCH OVERSPRAY

BY DALE O. BENDER
Chief Sales Engineer*

TO OBTAIN the best performance from any product, it must be applied correctly. Modern paint arrestors offer numerous desirable features in performance, economy and versatility. However, they must be applied correctly—and in addition, city and state codes and national standards must be complied with.

The National Board of Fire Underwriters Pamphlet No. 33 is the basic standard from which most city and state codes are based. They recommend a minimum velocity through the booth of 100-ft. per minute, and this requirement should always be complied with in designing a paint-arrestor equipped booth.

The basic module around which a paint-arrestor equipped booth is designed is the 20x20-in. holding frame. Each of these holding frames is filled with two wire supporting grids, and two 1-in. thick paint arrestor pads. The holding frames are riveted together to form a paint arrestor bank of the desired size.

*Research Products Corporation, 1015 E. Washington Ave., Madison, Wisconsin.

Fitting a 10x7-ft. Spray Booth With Paint Arrestors

Perhaps the easiest way to point out proper design is to describe a typical spray booth to be fitted with paint arrestors. Let us assume that we have a booth 10-ft. wide, 7-ft. high and approximately 10-ft. deep. This may be a brand new booth or it may be a conversion from an existing booth. The 10-ft. width will accommodate six 20x20-in. holding frames across the face. Seven feet of height will accommodate four holding frames in height, with the remaining 4-in. to be blanked off by sheet metal.

The 4-in. of extra height in the booth may be blanked off at either the top or bottom. However, blanking off the top allows the use of a lighter gauge metal, since it does not have to support the bank of paint arrestors. A bank of paint arrestors should be located forward of the back wall, a distance equal to the diameter of the exhaust fan. This will be determined after calculating the size of the fan needed.

Most codes and the National Board of Fire Underwriters recom-

mend a minimum of 100-fpm. past the face of the operator. To obtain 100-fpm. when the filter pads are loaded will require 125 to 150-fpm. when they are clean. This booth has a cross sectional area of 70-sq. ft. (10x7) which means a fan sized for 70x125 or 8750-cu.ft. per minute. When using 125-fpm., the blower should be sized for ½-in. of resistance. One-half inch of resistance is based on the resistance of the clean filters plus the necessary duct work. If 100-fpm. is used, the blower should be sized for ⅝-in. resistance (loaded resistance).

A glance at a typical fan catalog indicates that a 34-in. 1½-hp. fan will move 8750-fpm. against ½-in. resistance, or 7000-cfm. against ⅝-in. In this case, the paint arrestor bank would be located at a minimum of 34-in. from the back wall of the booth. Generally the paint gun would be used in an area about 5-ft. from the paint arrestor bank.

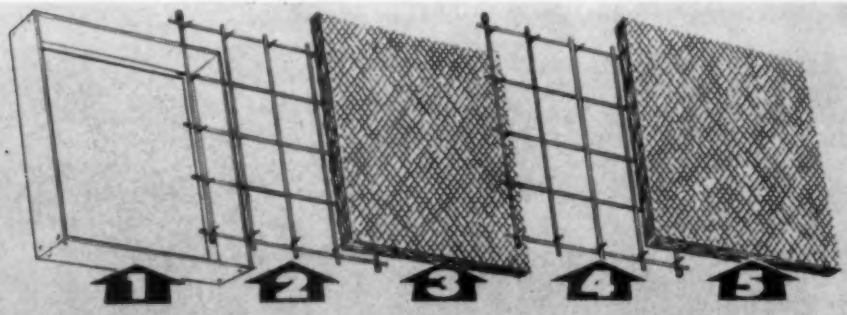
From this point on, standard good spray painting practices should be followed. This means proper triggering of the gun by the operator, correct gun pressures and the right paint for the application.

Paint arrestors, installed in any type of dry spray booth, let the air flow through but catch overspray and prevent it from collecting inside the exhaust pipe, where it is a fire hazard — and prevent it from blowing outside where it could damage parked automobiles and the neighbors' property.

It is also important that a good supply of clean make-up air be furnished, preferably filtered to remove dust, lint and various other contaminants.

How Often You Will Need to Change Filter Pads

The first question a new or prospective user of paint arrestors usually asks is how often must he change them. This is like asking a gasoline station operator how often he must fill the gas tank. The "mileage" being obtained is subject to many variables. [*To p. 28*]



No. 1 is the holding frame; Nos. 2 and 4 are snap-in grids; Nos. 3 and 5 are paint arrestors.

[*Continued from page 27*]

For example, we must consider:

1) The object being sprayed. If you are spraying bicycle wheels or garden rakes you will be changing paint arrestors much more often than if you are spraying cabinets and tables made of sheet metal.

2) Gun pressure. The compressed air pressure being used will affect the tendency of paint arrestors to become surface loaded or depth loaded. Excessive air pressure wastes air and paint as well as paint arrestors. The advice of the spray gun manufacturer should be followed; the minimum pressure feasible to do the job is recommended. Where compressed air is used for spraying paint I have found very few applications where atomizing pressures in excess of 35 to 55-lbs. per square inch are needed, or where material pressures in excess of 5 to 15-psi. are needed. (Note: These pressures do not apply to airless spraying.)

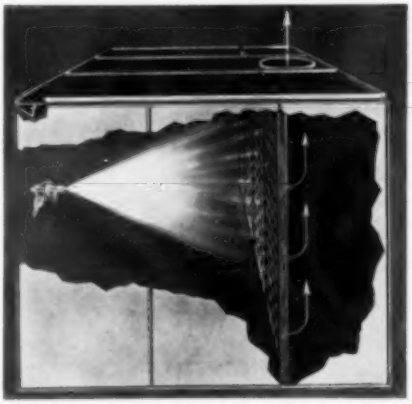
3) Velocity of air through the booth. The life of paint arrestors is also affected by the velocity of air being drawn through the spray booth. An extremely high velocity results in paint reaching the paint arrestors in a wet, sticky state which naturally causes a quick clogging of the filter pads. Excessive air velocity will also actually pull the paint past the object being sprayed.

4) The distance from the spray gun to the paint arrestor bank. This will vary with the other variables. Normally it is recommended that the operator start with 5-ft. and increase or decrease this distance, depending on the paint used.

5) The operator. The tendency of paint arrestors to become loaded can be affected very drastically by the habits of the operator. A good operator who triggers his gun at the beginning and end of each stroke can reduce the overspray 10% to 30%.

How Many Gallons of Paint Are Sprayed per Day

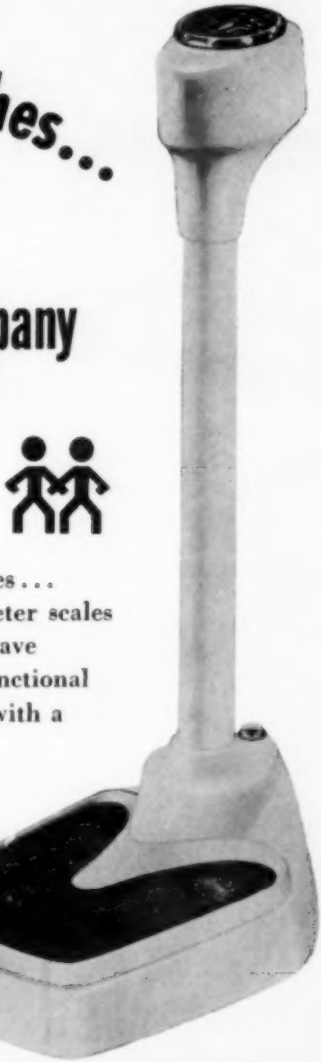
To give a user an estimate of his changing time, we use a rule of thumb of three to five gallons of paint sprayed per pad. This assumes approximately 50% overspray. For the booth previously mentioned in this article, the 24 pads will mean changing every 72 to 120 gallons of paint sprayed. In the average small shop, the operator sprays from 10 to 20 gallons a day which means changing the paint arrestor every six to 12 days. In changing, only the front pad is removed. A clean pad is put in back and the pad that was in the rear is put in front. The 24-pad booth



Cutaway view of typical paint spray booth shows proper location of paint arrestors.

Standard T Finishes...

are known by the company they keep!



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Fine Finishes Since 1848

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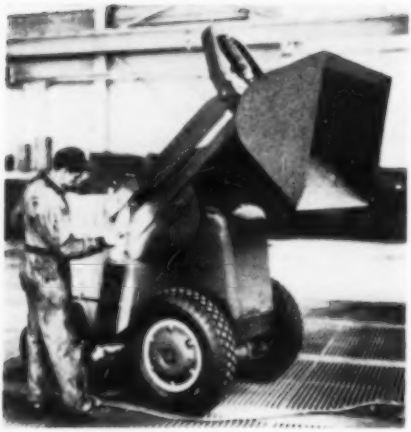


The steel grating here covers a down-draft spray area. A level bank of paint arrestors is installed below the grating.

mentioned could be changed by one man in 20 to 25 minutes.

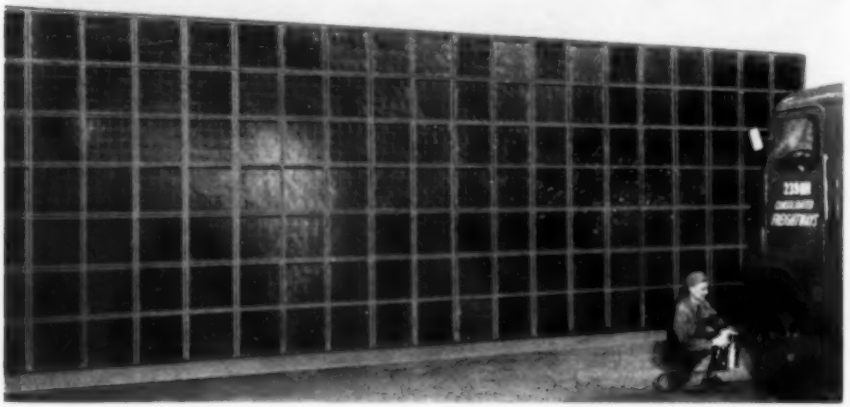
Immediately upon removal of the loaded pads, they should be treated the same as heavily soiled paint rags, etc. They should either be burned or stored in a water-filled metal container until such time as they can be disposed of.

In addition to the cost merits of paint arrestors, many users have noted other desirable features. The light weight of paint arrestors allows them to be used in areas which otherwise would require a reinforced floor. The module system of construction allows them to be fitted into a variety of shapes to suit the product being sprayed. Some booths are long and low while others are very high and narrow.

Paint Arrestors Offer Low Resistance to Air Flow

The low resistance of paint arrestors led one user to comment as follows: "One of the greatest benefits of this system, over our old system, is the increased air velocity through the spray booth. The air velocity was increased 33⅓% by our actual tests. With this increased air velocity and a more even distribution of air, the spray fog is now cleared out of the booth

An installation of paint arrestors in a large booth used for spray painting truck bodies.



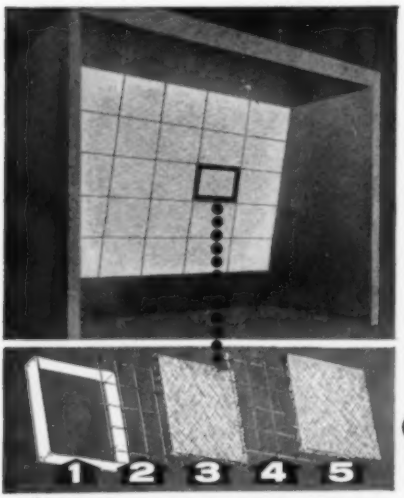
in five seconds or less. Increased air velocity has made possible a substantial saving in paper for floors of booths, and also in the cleaning of grates (this was a down-draft type of booth using grates)".

This same user had this to say about the efficiency of overspray removal: "Also, we find the overspray coming out of the roof vents reduced to almost nil, with a corresponding reduction in the possibility of damaging cars and homes in the neighborhood."

Although most users report savings of 40% and more, one concern is using paint arrestors, even though its specific application is not as economical as other systems. However, this firm is still money ahead because of "planned down-time." The company's employees change paint arrestors at lunch breaks, coffee breaks or shift breaks so that there is no down time. If they were forced to shut down their production line during an unplanned malfunction, their down-time loss would exceed any possible savings.

If one is well-balanced or well-adjusted, he usually can accept change easily. But for those individuals who are less well-adjusted, the thought of change is often disastrous.

A change is very difficult to take when a person is being deprived of something he has been accustomed to—when he has to exert more effort for the same reward, or when he is given a job he thinks is not good enough for him.



A Paint Arrestor module consists of a Holding Frame (1), two Snap-in Grids (2 and 4), two Paint Arrestors (3 and 5). Loaded Paint Arrestors are simply replaced as necessary. And, they're also ideal for air-borne ink, mist, dye, frit, etc.

CONTROL PAINT OVERSPRAY the inexpensive, effective way!

The advantages of R P Paint Arrestors, the inexpensive, disposable air filters are many. Overspray solids are trapped before they reach the exhaust stack...to reduce fire hazards, damage to adjacent property...disagreeable and time-consuming maintenance work. Installation? —easy and fast. Maintenance? —remove loaded Paint Arrestor and replace a new one. Adaptability? —ideal for any type, any size booth, new or existing.

RP® PAINT ARRESTORS

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NEW

AG PAINT ARRESTOR PADS CATCH AND HOLD MORE PAINT!

ONE 2" AG PAD DOES THE WORK OF TWO 1" PAPER PADS

New AG Pads are specially engineered *white fiber glass* pads with the *green* back. They save you money because they give *longer* service, hold more paint, cut maintenance upkeep. Their greater holding capacity keeps your spray booths cleaner. Non-clogging — less "drag" on your fans. Try them in your filter banks and notice the difference AG Pads make!

AAF **American Air Filter Co., Inc.**
Amer-Glas Department IF-1
215 Central Ave., Louisville 8, Ky.

Please send information on AG paint arrestor pads.

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☐ Choice distributor territories open. Check here for distributor franchise data.

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Ultrasonic Cleaner Used to Clean Missile Parts

THE LARGEST and most powerful ultrasonic cleaner of its type in commercial use now cleans critical Atlas missile parts in half the time previously required.

This new system was designed and manufactured by a concern in San Diego, Calif. The system utilizes a newly developed, fully-transistorized generator in modular form, delivering 25,000-watts power to the cleaning tanks.

Installed near the Atlas ICBM assembly line at Convair, the Acoustica cleaner is used to clean large fuel and liquid oxygen system parts for the Atlas and Centaur missiles, for which absolute cleanliness is a necessity. The slightest contaminant un-

Large Atlas Missile fuel duct is immersed in powerful ultrasonic cleaning system at Convair-Astronautics.

removed in the cleaning process, when exposed to liquid oxygen, would cause an explosion or a serious missile failure.

The large cleaning system consists of two 500-gallon transducerized tanks, one for "clean" and the other for "rinse," that are alternately activated by the 25,000-watt generator. Upon activation, high-frequency sound waves flash through the cleaning or rinsing solutions in the tanks, setting up a powerful scrubbing action known as "cavitation." Cavitation, caused by this ultrasonic cleaner, does a fast thorough job of cleaning these large parts.

The new 25,000-watt generator operates at a frequency of 20-kilocycles. It provides simplicity of operation at low cost through automatic tuning, and assures maximum cleaning power at a constant rate.

The ultrasonic system used here also contains a recirculator which completely pumps, filters, and heats the liquid in either tank before the liquid re-enters the tank on its return cycle. Replaceable filter cartridges are used in the recirculator, allowing for filter sizes ranging from 1 to 50 microns, as well as automatic indication when filters need replacement.

Pre-Fos Prevents Rusting Prepares Metal for Paint

A colorful, 4-page folder, 8½ x 11-in., tells how Wyandotte Pre-Fos prevents rusting of in-process steel parts, prepares metals for paint by depositing a fine-grained corrosion-resistant iron phosphate coating which saves paint and provides good impact resistance. Used either as a spray cleaner or soak cleaner, Pre-Fos simplifies processing by cleaning and phosphating in a single operation.

For Folder F-2374, write J. B. Ford Division, Wyandotte Chemicals Corp., Wyandotte, Michigan.

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Lacquers — Enamels — Synthetics — Vinyls

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When Planning, Keep in Mind Possible Changes

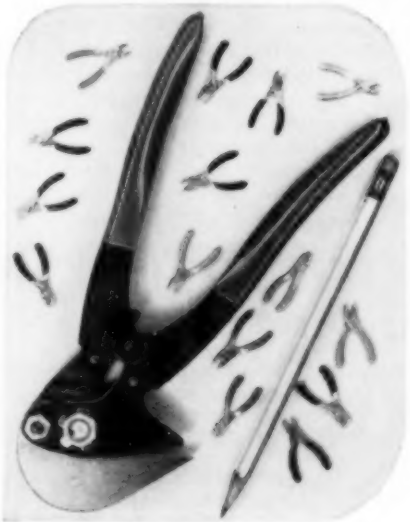
WHEN INSTALLING a conveyorized finishing system, flexibility should be kept in mind. This applies not only to paint application methods, but to baking facilities. Spraying the paint may be the order of the day, but this does not rule out the future possibility of dipping, flow-coating, curtain coating, roller coating or electrostatic coating of certain parts. In installing the system, suitable locations for possible added equipment or work areas should be planned — depending, of course, upon the products, the plant and other conditions.

Flexibility in baking facilities is also important. A baking schedule designed for the faster-curing resins may be desirable at the time of installation. However, should the occasion arise where, for example, the maximum properties of chemical resistance are required and only such things as phenolics or epoxies are suitable to solve the problem, the set-up for a short, low-heat bake will probably be inadequate.

For long range baking facilities it would seem desirable to aim for conveyor speeds designed to provide baking periods of from ten to 30 minutes, at temperatures ranging from 250° to 350° F. Skimping on temperatures may seem to be economical at the time of installation, but the final cost may outweigh the original saving.—*T. J. K.*

Pyroxcote® Plastisols

PERFECT PLASTIC COATINGS FOR MIDGET TO MAMMOTH SIZE PRODUCTS



These ENGINEERED vinyl dispersions can be applied by dipping, casting, spraying or spreading. Fused by heating, the resulting plastic coatings may be thick or thin, colored or colorless, dense or porous—depending on your specific requirements.

We can't begin to cover the possibilities here, but drop us a line—we may be able to provide a better finish, with significant savings in time and money.

Write or phone...

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To Keller Manufacturing Co., Inc., it means a savings of nearly $50 a day in finishing costs on leaf rakes. And, theirs is a comparatively small plant operation.

Before moving into their new plant, this St. Louis manufacturer of Sweep-Easy lawn and garden tools investigated and tried out various finishing equipment. They chose Ransburg No. 2 Process to do the job because they found that only the Ransburg Electrostatic Hand Gun could give them the desirable increase in production—with improved quality—and at lower cost.

PRODUCTION IS NEARLY DOUBLED
QUALITY OF FINISH IS IMPROVED

With the Ransburg Hand Gun, Keller's daily painting production of leaf rakes nearly doubled what they were formerly getting with air hand spray. And, where they used to get only 168 rakes per gallon of paint, they now get 426 per gallon—over 2½ times as many—actually *an increase of over* 150% *in paint mileage.* With the unique "wrap-around" feature, electrostatic is improving the quality, providing a complete, uniform coating over all areas—even on the tine edges.

NO REASON WHY YOU CAN'T DO IT, TOO!

See how the Ransburg Electrostatic Hand Gun can save time . . . paint . . . and cut costs in YOUR finishing department. Or, if your production justifies, it'll pay you to investigate Ransburg's automatic electrostatic spray painting equipment. Write for our No. 2 Process brochure which shows numerous examples of modern production painting in both large and small plants.

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WHAT'S NEWS IN ENJAY RESINS FOR SURFACE COATINGS

Alkyd Melamine
After 500 Hours
Salt Spray

Epoxy Ester
After 700 Hours
Salt Spray

Buton 200
After 700 Hours
Salt Spray

BUTON® 200 Resin offers better corrosion resistance–saves up to 1/3 the cost

In a recent series of salt spray tests, Buton 200 Resin outperformed epoxy ester and alkyd melamine formulations. All samples were automotive primer formulations with equivalent pigmentation. Test results? The Buton based primer had the lowest creep of all three. Impact testing also revealed that Buton-based primers had good adhesion, flexibility and impact resistance. By selecting Buton 200 Resin, you can save up to ⅓ on metal primers. Samples and a booklet on Buton Resins for metal primers may be obtained by writing to 15 West 51st Street, New York 19, N. Y.

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Top-Selling Progress Fixtures Go To Market In Cosden Finishes

As a pacesetting company in the highly competitive lighting field Progress Manufacturing Co., the world's largest manufacturer of residential lighting fixtures, must have finishes with high sales appeal and low application costs. Cosden meets these requirements not only with "showroom" finishes but also with on-the-spot service and up-to-the-minute product development.

One-coat baking enamels in several different colors designed to take the same bake helped production scheduling by making use of a common conveyor and oven. (see illustration) Clear-copper, Clearbrass and Clearchrome — Cosden's absolutely non-fading finishes were developed rapidly to help Progress keep abreast of competition. Finishes applied by hand spray, dipping and electrostatic systems all conform to high conveyor speeds and fast bakes.

These few examples of what has been done for Progress only hint at the many ways Cosden can help you. Write today —your inquiries on finishes and application procedures will receive prompt attention.

COSDEN PAINT COMPANY

BEVERLY NEW JERSEY

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Cleaning and Finishing Operations on ELECTRICAL EQUIPMENT

By W. L. Huss, V. P., Manufacturing
B & C Metal Stamping Company*

THE PRODUCTS we manufacture consist chiefly of electrical metering equipment of practically every size and capacity, electrical control cabinets and switch gear panels. The equipment is fabricated in aluminum alloy and in cold-rolled zinc-coated and galvanized steel.

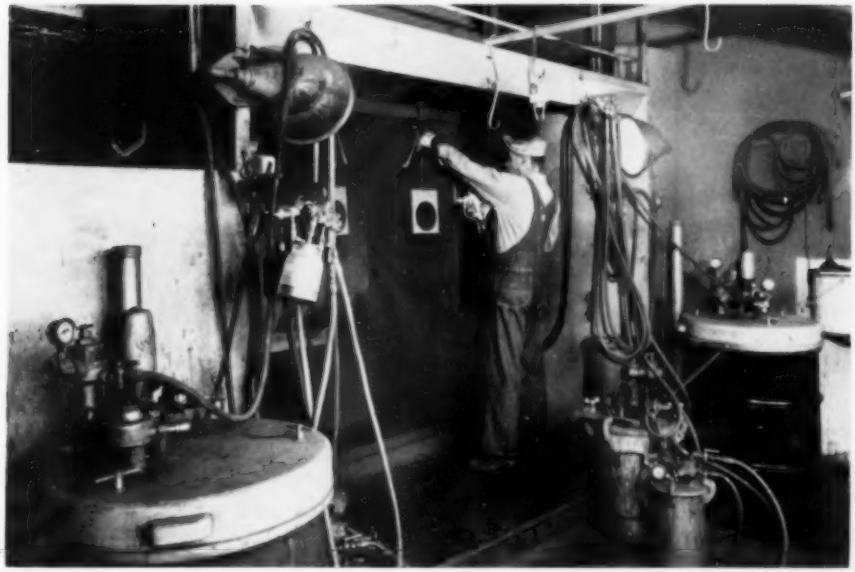
One washer and phosphatizing machine is used for the surface preparation of all of our products. However, for more convenience and greater efficiency we have two finishing rooms. One is for painting control cabinets and switch gear panels; the other is for processing all other products.

Six-Stage Washer Prepares Steel and Aluminum Surfaces

Obviously, for surface preparation, it is necessary to separate the aluminum alloy and steel parts when loading the conveyor.

First, let us consider surface preparation of the aluminum alloy meter box parts. In the first stage, the parts are sprayed with a phosphoric acid cleaner at 160° F. This is followed, in the second stage, by a mild alkali etch at 160° F. Next comes a hot water rinse at 160° F. In the fourth stage a phosphate solution is sprayed on at room tem-

*590 Means St., Atlanta, Ga.



A variety of metal parts are coated in this water-wash booth as they move from right to left. A hammered effect finish enamel and a light gray enamel are pumped directly from drums at right and left. Special drum heads, fitted with an air-driven agitator and pump, are used. The small pressure tanks shown at right are only used for special colors.

perature. This is followed by two cold water rinses in stages five and six. All of the parts processed have weep holes so that process solutions and rinse water drain off completely before the parts enter the dry-off oven through which they travel for ten minutes at a temperature of 300° F.

Aluminum Parts Coated With A Hammered Enamel Finish

Remaining on the conveyor, the cleaned aluminum parts travel a sufficient distance to cool for 20 minutes before they enter a water-wash spray booth. Here a one-coat gray hammered-effect enamel finish is applied. The viscosity of the enamel is 18 seconds at 77° F., as measured in a No. 4 Ford cup. Atomizing pressure is 50-lbs. and fluid pressure is 20-lbs.

After a flash-off (air drying) period of three minutes, the finish is baked for ten minutes at 300° F., in an elevated, indirect gas-fired convection oven. The parts cool as they travel to the assembly line.

When steel parts for meter boxes are being processed, stages 2, 4, 5 and 6 of the power washer are shut down. In the first stage the phosphoric acid cleaner is sprayed over the surfaces at 160° F. In stage 3 a hot water rinse follows with the same dry-off time. In other words the steel parts for meter boxes re-

ceive only a 2-stage cleaning—an acid cleaner and a hot water rinse.

The clean dry parts receive a spray coat of gray alkyd-resin-base enamel, the viscosity of which is 22 seconds at 77° F., as measured in a No. 4 Ford cup. Atomizing pressure is 40-lbs. and fluid pressure is 20-lbs. After a flash-off period of four minutes, the finish is baked in the elevated convection oven for 12 minutes at 300° F.

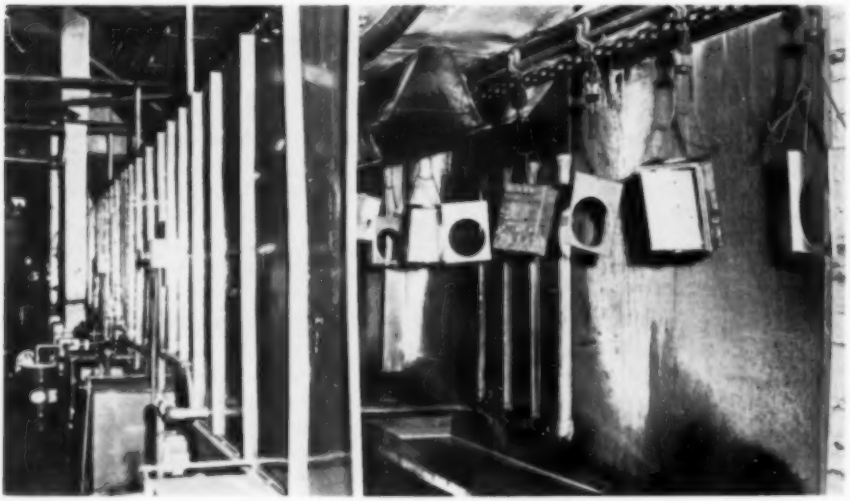
They have solved the problem of cleaning, surface treating and painting different metals and different kinds of parts on conveyor lines. Their finishes include hammered-effect gray enamel which is baked, and a neutral gray lacquer primer.

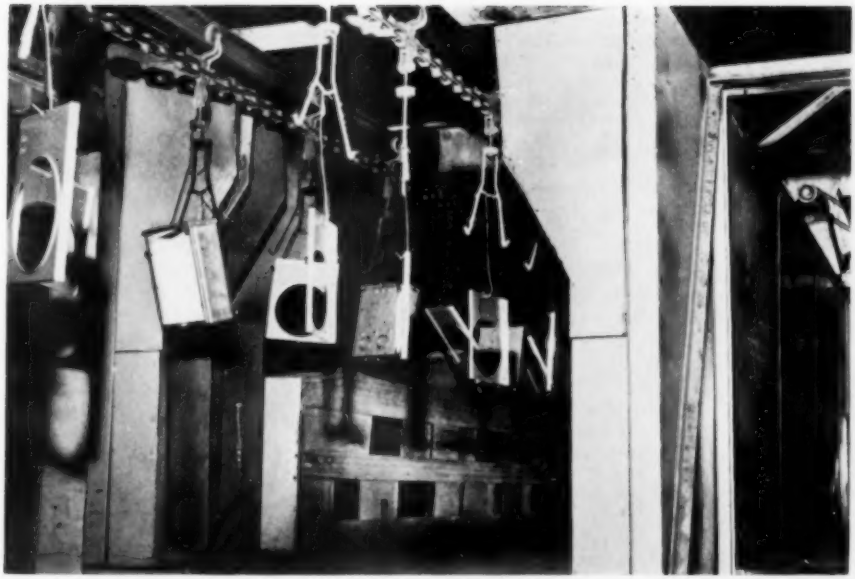
Cleaning, Smoothing, Finishing Sheet Steel Panels

Control cabinets and switch gear panels, in the bare metal, are sanded smooth with 60-grit abrasive discs before entering the power washer and dry-off oven. When the cabinets and switch gear panels leave the power washer and dry-off oven, and become cool enough to handle, all rough places are putty-glazed. An air-drying putty is knifed onto the rough areas. The putty is allowed to air dry for a minimum of 15 minutes before the putty glazed areas are wet-sanded with No. 320 wet-or-dry sandpaper. Upon drying, the surfaces are hand washed with solvent to remove any remaining abrasive dust and finger marks.

The cabinets and panels move to the prime coat spray booth. Here they receive a coat of neutral gray

Here you see metal parts leaving the 6-stage power washer to go through a dry-off oven.





Electric meter parts entering the elevated convection oven where finish is baked. Space below the oven is used for storage and for some production operations.

lacquer primer. In many cases these products are packed for shipment after air drying for about an hour, as most orders specify only

Painted steel cabinets ready for installation of electrical equipment

the prime coat. In other cases we apply either a light gray or green lacquer finish. Special colors are also available on order.

Michigan Oven Co. Appoints New Representatives

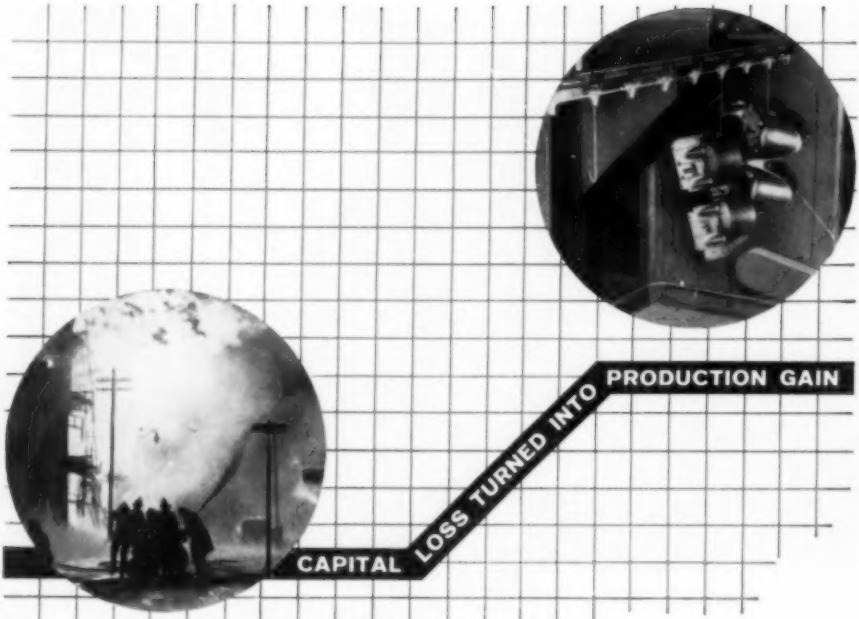
Edward R. Talone and Charles F. Dilcher have been appointed national sales representatives for Michigan Oven Co., Detroit.

Talone will handle all sales-engineering activities for the firm in the Baltimore, Md., area. Dilcher will handle similar activities for the Atlanta, Ga., territory.

Talone has over 11 years of experience in the industrial sales field, with heavy emphasis on engineered oven systems, furnaces and related manufacturing equipment.

Dilcher was formerly with Sunbeam Equipment Corp. where he held the position of assistant chief engineer. He specialized in the engineering and development of industrial furnaces. In addition, he was chief engineer with another firm. He currently heads up Dilcher Engineering Company.

Michigan Oven Co. manufactures and sells nationally a complete line of specially engineered oven systems, as well as wire enameling equipment and complete finishing systems.



from plant ruins to production records in sixty days

One of the toughest rebuilding problems confronting the Clements Mfg. Co. when their Deckerville, Mich., plant was completely demolished by fire, was speedy replacement of the finishing system needed for phosphate coating and painting of its diversified line of automotive diecast and sheetmetal parts.

The new system had to be versatile—had to handle many different sizes and shapes. It had to be inexpensive to operate fuel-wise and labor-wise. Above all, it had to be delivered and installed in a matter of a few days—it had to do a high quality job right from the start—and it had to take up little floor space.

Experienced MOCO design and process engineers rose to the challenge.

First, a 3 stage washing machine for phosphating and rinsing was designed and built at the MOCO plant, and shipped completely finished, except for piping hook-up, directly to the Clements Mfg. Co. plant.

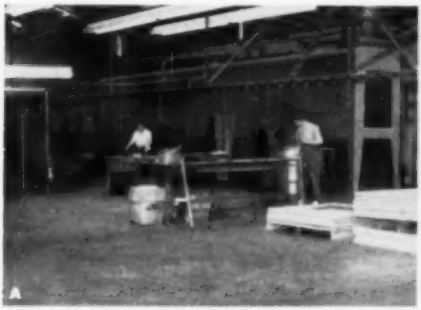
Next, MOCO engineers tackled the drying and paint baking problem. A combination Dry-off and Bake Oven was developed that could dry parts as they came from the washing machine on their way to the spray booths, and bake the painted parts as the conveyor returned them to the oven for a longer period before delivery to the conveyor unloading station.

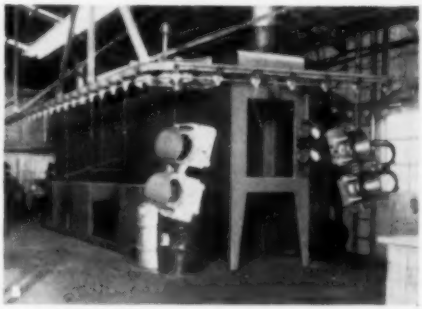
The Dry-off and Bake Oven was too large to ship already assembled, but MOCO's unitized design made assembly at the Clements Mfg. Co. plant a relatively simple matter.

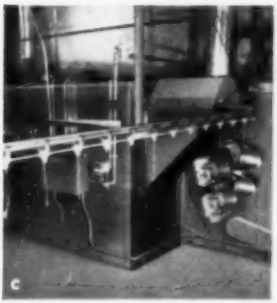
Within 60 days of the disaster, the Clements Manufacturing Company plant was back in full operation with production at a higher level than ever before, thanks to MOCO ingenuity, engineering skill and desire to serve its customers. MOCO problem-solvers will welcome the opportunity to serve you.

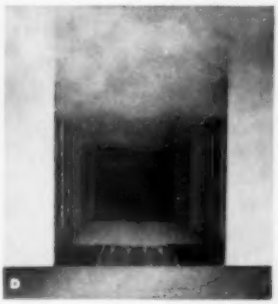
Write for the name of our representative nearest you.

FREE—Send for your MOCO bulletin showing typical finishing system applications and specifications; no cost or obligation, of course.









A—Sixty days after the Clements Mfg. Co. plant was burned to the ground this finishing system was in operation in the rebuilt plant. In the right foreground workers are loading and unloading parts. Behind them is the MOCO Washing Machine. On the left, paint spray booths hide the MOCO combination dry-off and paint baking oven. B—Start of the completely conveyorized finishing cycle. From loading station at left parts enter MOCO 3 stage washing machine for washing, rinsing and phosphate coating. C—Finishing parts coming out of combination dry-off and bake oven on their way to unloading station. D—Entrance view of phosphating machine indicating risers, nozzles, street ells, drain decks, access walkways, spray zone silhouettes shown immediately after pump stopped. E—3 stage MOCO washing machine showing tanks, fill and overflow pipes and valves, pumps, burners, controls and exhaust ducts.

60-A

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METERING Paint Liquids

BY C. R. BROWN, Pacific Coast Editor

The volume of liquid paint or lacquer that flows through a supply line can be accurately measured by meter. The author has visited plants where such meters are in service and has found some interesting facts about their operation.

METERING of paint liquids is sometimes desirable, for any one or more of several different reasons. It can be easily used to find out how much material is being consumed on a particular job, or for a given length of time. This may be for inventory control or to obtain accurate cost figures. Inasmuch as the metering of paint and lacquer materials seems to be of interest I will first discuss the matter generally and then detail the actual practice in two local (San Francisco) fixture shops. This discussion, by the way, is solely on paint liquids in a spraying system.

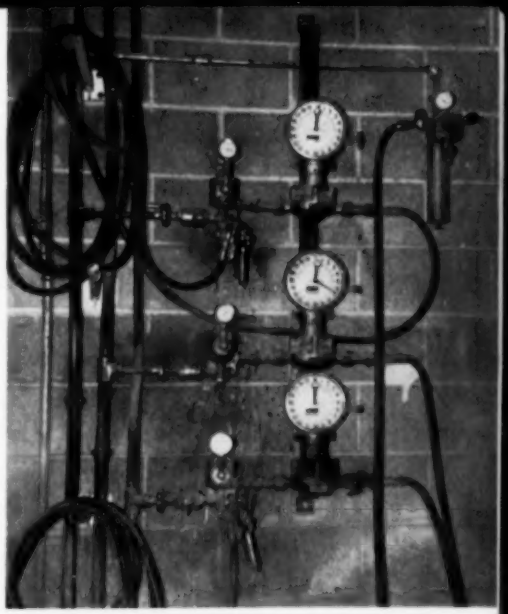
Metering is the accurate measurement of the amount of material —solid, liquid or gaseous—that passes through a line over a given time interval or on a particular job. Meters can be calibrated in any desired unit, that is, Standard U. S. gallons, Imperial gallons, litres and various units of weight and fractions thereof. They can be installed in a pipe line at any desired or convenient point from the supply source up to the spray gun or outlet. They can be used at room temperatures or at the elevated temperatures encountered in hot spray finishing. The meters referred to in this article are on ¾-in. pipe: maximum operating temperature 250° F.; maximum operating pressure 150-lbs. per square inch; maximum rate of flow, 30 gallons per minute.

Can be in Circulating System; Cleaning is Simple and Fast

Meters can be incorporated into circulation systems as well as in direct flow lines. They can be used for clear lacquers, sealers and varnishes, pigmented undercoats, pigmented lacquers and enamels, and synthetic enamels. There is a minimum of maintenance involved. Wear and tear of the mechanical parts is negligible; the only re-

placement reported is gaskets, and this very infrequently—when the meters are taken apart for cleaning. Incidentally, this cleaning is a simple 15-minute job and can be done with relatively unskilled labor. The dials are large (11-in. in diameter) and easy to read at a distance.

Strainers are advisable to insure accuracy of the meters. On pump-operated systems anti-drain valves and sometimes anti-drip valves are necessary. Insofar as flushing out the meters is concerned it is the same as clearing a line that doesn't have a meter. Pigmented undercoats do not seem to erode the working parts of the meters; and sticky viscous materials, such as enamels, lacquers and synthetics, do not gum or clog the meters. So much for the general observations; now for the two specific installations.



Picture of a meter installation in a factory in San Francisco, Calif. This shows three circulating lines. On each line, from left to right, there is a filter, pressure regulator and a meter. Then the metered material flows through the hoses to the spray gun. The center line is in operation. The hoses and guns are shown coiled and hung. The pressure regulator and the air cleaner in the upper right hand corner are for the air line leading to spray guns.

Experience of a Shop That's Used Meters for Six Years

The first shop—Unit Built Fixture Co.—has used meters for over 6½ years. After investigating several different makes, the company decided on Neptune Meters. The material is pumped from drums located in a fireproof room some 100-ft. from the spray booth, to the booth and back to the material source. It is a circulating system.

There are three of these circulating lines; one is for undercoat material; one is for synthetic enamel, pigmented; and one is for high-solids lacquer operating at an elevated temperature of 140° F. The draw-off from the circulating system in the booth is conventional; and right at this point is introduced the strainer, a pressure gauge and the meter. The strainer and measured paint is fed to the hoses and thence to the spray gun. It is as simple as that. The accompanying diagrams will help you to visualize this setup.

Merely as a precautionary measure, at the beginning of the shift or after any prolonged inactivity of the line, the practice here is to run about one gallon of material through the meter; this liquid is returned to the original supply drum or tank. This precaution as-

sures the operator that the meter is working and registering.

Every six months or so the meters are taken apart and cleaned.

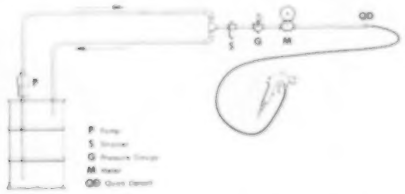
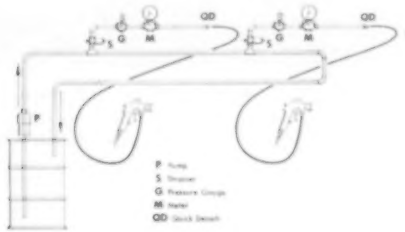
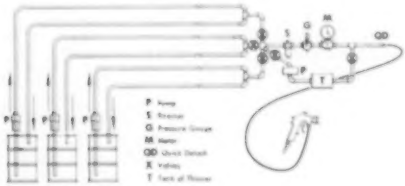


Diagram of single circulating system from drum to spray gun—and through meter.



A single circulating system supplies two spray stations each of which has a meter.



Operation: Opening any one valve between the circulating lines and meter line allows passage of material. Both of the other two valves are closed.

To clean meter line, close all three valves from supply lines; open both valves on solvent cleaning line and start pump P. The solvent circulates through the meter line then back to solvent tank. Then close valve X, pumping the solvent out through QD. Close both valves on the solvent cleaning system; open the valve that will release the desired material.

This is a 15-minute job; it includes disconnecting one union, unscrewing two joints and four cap screws. The meter parts are then washed with acetone, blown clean with compressed air, and the meter is reassembled and placed in the line. At this time a new gasket is usually put in. Interestingly, in 6½ years, no mechanical parts have shown enough wear to require replacement. From start to finish, about 15 minutes is all of the downtime involved; the job is done with ordinary unskilled labor.

Checking the Accuracy and Quick Response of Meter

In order to check the accuracy of the meter I removed the air cap from the spray gun and filled a quart can with paint; the meter registered exactly ¼-gallon. Another test was to open the gun on the undercoat line to see if and how soon the meter would start to register. This line had been inoperative for over 36 hours and had not been flushed before this test. The meter indicated the flow of material at once. This was ample proof to me that these metering systems were maintaining accuracy and were not clogging up. This company is completely satisfied with the installation and expects to have a similar one in another paint shop in the near future.

The second shop in which I found a meter being used to measure the flow of paint materials, is quite similar. This firm also has three circulating lines—all clear materials, lacquer sealer, gloss and semi-gloss lacquer. These lacquers are all used at room temperature. There

is this difference, however; there are two spray stations on each of three lines, which calls for six meters with strainers and regulators. This installation has been going now for 31 months. After the initial adjustment they have never taken the meters apart for cleaning.

In this shop, cleaning consists of running lacquer thinner through the entire circulating system, draining same, and then they use the thinner for reducing their lacquer. No loss on that score. Al Dimond, the finishing superintendent, has observed some build-up in the hoses, which are after the circulating system and meters. However, he does not attribute this in any way to the metering devices. It occurs in most conventional layouts; the remedy is to flush out these hoses independently of the circulating-metering system. Mr. Dimond is very enthusiastic about his experience with metering.

Spray Pressures and Temperature of Materials

In both of these shops they operate at normal spraying pressures of 40 to 60-lbs. per square inch. Room temperature materials are used in all lines but one, which is run around 140° F. It is probable that metering catalyzed materials would involve some problems, therefore if this comes up, the meter supplier should be consulted. While it is usual to use a separate strainer, regulator and meter for each line, it is possible to work out a system wherein the same meter and accessories are used for two or more lines. The different liquids should have similar viscosities and be similar in other respects; and here again the meter manufacturer should be consulted for specific recommendations. It would involve a complete flushing and cleaning at each change-over. Certainly this is mechanically possible but there might be a question as to whether it would be economically feasible.

No reports seem to be available on airless spray, with its attendant high pressures, but it would seem to me that metering could be done at a point between the supply source and the high pressure pump. This would call for a recommendation from the meter manufacturer.

Counting the Strokes of Pump as it Operates

Mention should also be made of another method of metering or measuring the volume of paint or lacquer that enters and flows through a pipe line. This is to position a counting meter so it will count and record the strokes of the impulse pump that pumps material from the container. Each stroke of the pump delivers an exact quantity of liquid and the number of pump strokes can be translated into the volume delivered during a certain period of time or for some specific job. It should be possible to apply this to airless spray too.

The conclusion is that the metering of paint liquids, such as clear and pigmented lacquers, varnishes, undercoats, enamels, synthetics and most organic coatings can be successfully accomplished; and these metering devices can be incorporated into almost any spraying, roller coating or flow coating system, and at any convenient point.

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SPRAY MASKS
For Molded Plastics

By T. J. LaBounty
Midwest Technical Service*

BECAUSE there is so little information available regarding spray masks and their application, many decorators and finishers pass up work requiring their use. A decorating mask is used where a "paint line" exists; it is seldom used where a sharp line is required on a flat surface. A paint line may be a step, groove, lip or edge on the part. In this article I will not discuss masks of cut tape, which are often excellent for flat surface applications.

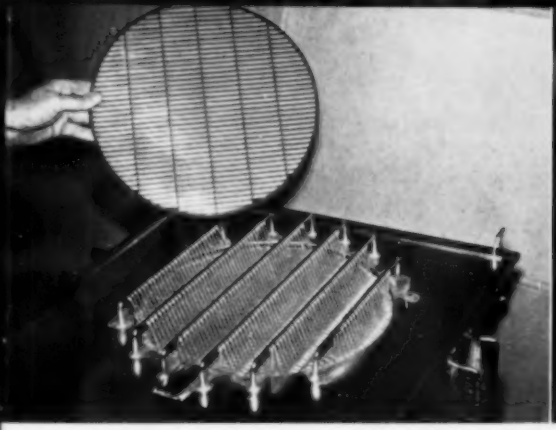
A formed mask may be made of:
1) an electro-form,
2) an electro-plate,
3) a metal spinning,
4) a hydro-form,
5) a vacuum form,
6) a casting (rubber),
7) or it may be fabricated.

Each type of mask has its own distinct merits and disadvantages.

The most common spray masks are the electro-forms. These are usually made of stress-free nickel,

*Box 61, Downers Grove, Illinois.

This workman is using a lay-on mask. Note the area to allow spray pattern. The mask must be sturdy, yet light enough to be picked up repeatedly in production. Photograph, courtesy of Conforming Matrix Corporation, Toledo, Ohio.



Here is an example of how "bridges" may have to be designed and shaped to allow a spray pattern without shadows. Photo, courtesy of Conforming Matrix Corporation.

A 2-part mask used in a spinning spray machine. Bottom half of mask acts as nest; top half is a hold-down fixture. Photograph, courtesy of B & T Plastics, Evanston, Illinois.

and fill sharp corners and radii. A hard stress free copper can also be formed. This process is sometimes called casting as opposed to electro-plates, which are made in conventional plating baths. Electro-forms are more durable and will take the repeated impacts of automatic clamping devices without undue loss of tolerances. Electro-plates, while neither as accurate nor as durable, are lower in initial cost. Metal spinnings are often used where round or tubular masks are required. Where a large number of masks are needed, a hydro-form may be used. A hydro-form, made of most any of the softer metals such as a copper alloy, is a shape draped over a hob. Formed by hydraulic pressure the shape does not fill in sharp corners—and the cost of the master form is usually high. However, after the initial setup, the cost per mask is comparatively low.

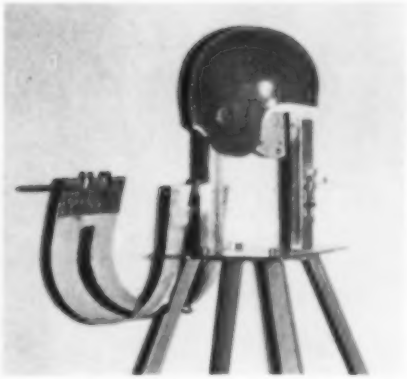
Another draped shape used for spray masks is the vacuum-formed thermo plastic. The cost per initial mask is low, but its life is extremely short—and complicated shapes or designs are usually ruled out.

Silicone rubber is sometimes used where an elastic mask is required. It is easy to cast and its cost is comparatively low. Its life is short compared to other types of masks. In the case of fabricated masks, magnesium is sometimes used because of its light weight. Reinforced fiberglass is also used. In this case the maintenance cost is high.

Deciding Which Type of Mask is Best for the Job

Before deciding upon the type of mask and fixtures to be used, many factors have to be finalized. For example:

1) The equipment on which the mask is to be used is one major factor. Some equipment, such as a vertical air fixture, on a high run will require a mask that can withstand a repeated high impact. Here the mask might be nickel, reinforced with steel and set into a



Flexible mask for painting wide stripe on football helmet. The helmets varied in size and the mask had to fit all sizes. These masks are not recommended for long production runs.

steel plate. The same operation, using a lay-on mask, might use a light weight electro-plated copper shield.

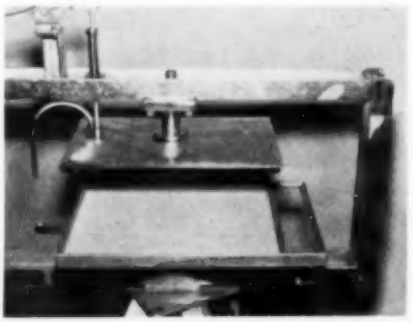
2) The handling of the part to be painted or decorated is another important factor to be considered. If the part is held by hand during the spray operation, consideration must be given to finger blisters and guide pins. If the part is to be moved from one opening in the mask to another, tumble bars may be in order. The matter of bridges, in conjunction with handling the part, is also a common consideration.

3) The technique used in manufacturing the part requires additional consideration. If the part is molded, the mask maker should understand the technique used in molding, and especially if more than one cavity is used. In a small precision plastic part, such as a decorated automobile horn button, the masks would have to be "averaged" out. Such parts are often made with 8, 12 or even 16 cavity molds, each cavity having a slightly different characteristic. Parts from each cavity must be checked out with the mask before releasing it for production.

4) The material of which the part to be decorated is made, is also a critical factor. Each material has some feature that the mask maker must keep in mind. Zinc die castings, for example, shrink upon aging. Extrusions may need some straightening after laying in temporary storage. Machined parts vary in size because of tool wear, and so on.

5) Physical impediments to the spray applications may require a design change or expensive masking. These barriers to production might be baffles, too many bridges, deep wells, or under cuts.

The terminology used by the mask maker is fairly standard. The drawings on pages 56, 58 and 60 show common types of masks. Other



A tight mask on a large area. Note the over and under guide pins and knock-out device. Part is laid upon nest which is activated by vertical air cylinders.

terms such as finger blisters or finger cavities and frame size are self explanatory.

The greater percentage of commercial masks are made of nickel, and most of them are used on plastic parts. It is in this general area that decorating problems, with spray masks, are most severe; so if we talk about problems and tolerances in spraying on plastic, it is because here they are most critical. The same problems exist on metal and wood, but to a lesser degree.

In relating a precision mask to the material, consideration must be given to thermal expansion, mold shrinkage, warpage, aging characteristics, etc. A nickel or copper mask can be very stable, while the molded part, especially a thermoplastic, can be quite elastic. Thermal expansion and mold shrinkage are two terms that often confuse the decorator.

Mold Shrinkage Different With Different Materials

Mold shrinkage is the shrinkage that takes place when the material hardens or sets in the mold. In many cases this shrinkage is necessary for removal of the part from the mold. Once this shrinkage has been established and fixed for the entire run, it should be no problem to the decorator. There are instances where the shrinkage will cause trouble. In our chart, three common styrene formulations are indicated.

On occasion a part may be run at a later date with the same molds but with a different material. In this case the original precision masks probably will not work and the molder seldom asks the decorator to use them. On the other hand, a molder may use the same material and the same mold but he may change the cycle. A rule of thumb in such cases is that the larger the part being decorated, the less chance the masks will perform in a satisfactory manner.

Let us look at the practical or realistic aspects of mold shrinkage. More often than not, molds are delivered to the molder late. The job is now on a rush basis. Since it takes at least several days to make spray masks, test parts are rushed to the decorator. He is told that these parts are the "same as" the production parts to come later. If the mold is later dressed, or if the mold temperature is changed or if the amount of material used in the shot is increased, the sample or test part will not be the "same as" the production parts.

As a precaution against this practice, a mask maker or decorator should hold a "retained" part. This part is a master—the one he used to test the masks when he made them. This test part can be used when production parts are run to determine, in the event of trouble, if a mask has been damaged or if parts are changed. At this point it should be stated that this shrinkage problem does not exist where an experienced molder and decorator are working together. The beginner in the field will meet the problem sooner, rather than later.

In the accompanying chart, standard data on thermal expansion is shown. Thermal expansion

THERMAL EXPANSION 10^{-5}, °C	
Acrylic	5-9
Hi Heat S.	< 20
Hi Impact	< 13

MOLD SHRINKAGE, INCH PER INCH		
Styrene	Hi Impact	<.008
	Unfilled	<.005
	Med. Heat Resist	<.006

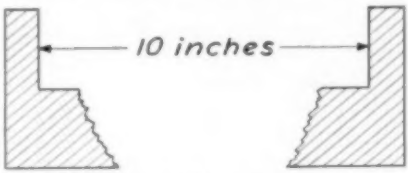
problems are caused in the decorator's department. On small parts, with slight temperature changes, it is seldom noticeable. But the automotive and appliance industries are painting larger parts each year. Television bezels, automotive instrument panels and control panels on electric ranges are typical parts where this factor is important.

For purposes of easy arithmetic, let us examine what happens to a plastic part 10-in. long when the temperature goes up 10°C. (50° F.). In this case, assume there is a paint step .010-in. wide on each end of this part. If the part happens to be a cabinet made of high-heat styrene, the expansion could be as great as .020-in. It is easy to see how a night shift can be spraying good parts and the day shift gets blow-by or feathered edges. In our example we did not have a large part. Imagine how these dimensions would change with a larger part and wider temperature ranges.

Warpage; Size Variation; Mask Tolerances

Warpage is a third item that can cause masking troubles and also confound the decorator. Warpage usually occurs in the molding or extruding room. The warpage of a plastic part can be corrected in the spray room by use of air clamps and fixtures. A die-cast part is not so easily corrected. Here, if warpage is a factor, the die-cast part should be placed in a straightening fixture immediately after molding or forming. Hand polishing and buffing will also cause dimensional variations in casting.

Dimensional variations are a problem that should be worked out before heavy volume is released for production. The technique of retaining a first sample is good for settling arguments, but it will not keep production moving. In the case of larger parts, a separate electro-form might be used as a check fixture for use in the molding room. Periodically, especially at shift changes, this should be used. To have as much as .025-in. polished off one section of a die-casting is a variation that seems acceptable in the trade. This condition is one which the mask maker will find hard to correct.



At 10°C. (or 50°F.) rise in temperature, the above 10-in. dimension will be:

Nickel	10.001
Acrylic	10.009
Hi Impact S.	10.013
Hi Heat S.	10.020

Other tolerances with which we have to work are those within the mask itself. A plug is a section of the mask that will fit into a re-

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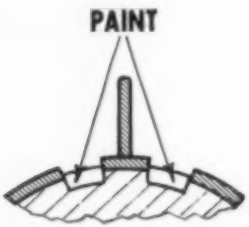


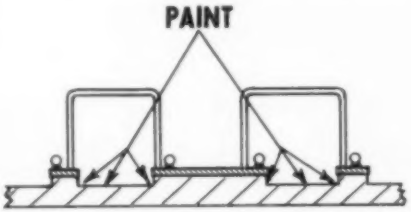
The Lip Mask for a sunken design. Where a depressed design is to be painted, besides form-fitting the contours of the part, the mask must have a "lip" of metal which extends down the sidewalls of the depression in order to trap the sprayed paint in the depressed well and thus prevent fogging.

cessed area on a part. For example, let us say that the letter O is cast ¼-in. high on the surface of the part. If we want to paint the O, a plug will have to fill the inside of the 0. The plug will be held by a vertical stem, which will hang from a bridge. A common question is, "How small can a practical plug be made?". The answer is, as small as a stem. A stem, to be strong and self supporting, is not less than .032-in. If a plug or recessed area requiring a plug is under .032-in., then there is good reason for asking an engineering change. Stems can be made less than .032-in. but when they are, they are used in pairs to give strength.

Lip of Mask; Bridge or Stem That Holds "Plug"

A lip is a section of a mask that hangs over an edge. In the letter O example above, let us suppose we want to protect the O and paint the flat surrounding area. Rather than just lay a flat plate on top of the O, we will overhang the edges by .004-in. to prevent blow-by. The .004-in. section is the lip. The thickness of a lip is a compromise with how deep the lip will be. A thin lip will abrade quickly unless due care is constantly exercised. A thick lip, in general, will require more frequent washing of the mask.

In conjunction with these dimensions, the problem of draft is always present. Rather than check out draft on a table or in a hand book, the rule of thumb is to use .017-in. for each degree, per inch. With the variations in parts, and sometimes heavy paint films, it is understandable why a decorator will ask for 5° or 6° on a wall .250-in. high. A draft of this type will help a plug seat itself. A plug should always seat easily.



A Lip Mask for capping a raised design. This same lipping principle is also employed where an embossed design is to be protected from the paint. In this case the lip keeps paint off the top and all (or as much as may be desired) of the sidewalls of the embossing. Free sections such as the centers of the numeral "8" are held in place by wire bridging.

A bridge or stem holding a plug is made to "give." When a plug seats itself, the bridge will often give a little and snap back into place when the part is removed. A vertical air fixture can operate at pressures of 40-lbs. to 60-lbs. per square inch. It may cycle in

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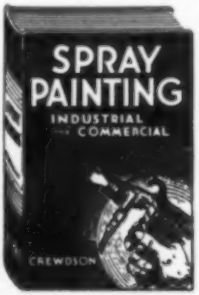

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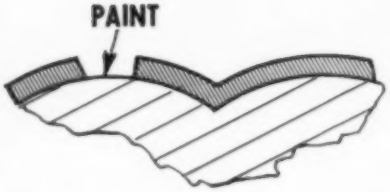
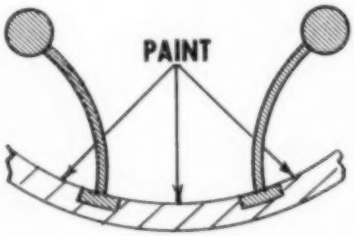


Block Cut-Out Plane Surface Mask. Where calibration lines or lettering, such as appear on many dials, are too small for practical individual masking, a cut-out area outlining a character or group of characters is more feasible from a rapid production standpoint. By confining the paint to a relatively small area, economies are achieved, since fewer wiping passes are necessary to clean pieces of excess paint.

excess of 100 strokes per hour. If the bridge is thin, or if the plug is too far off, the bridge may not take the constant impact. On the other hand, if a bridge is too thick, or too close to the part, it may cause shadows during spray operations. In practice a mask maker will often spray a part, and then relocate his bridges to get a better spray pattern. [*Cont'd opposite page*]



The Plug Mask. Where a depressed design is to be kept clean instead of being painted, plugs suspended from wire bridging must fit into such depressed sections to prevent paint leakage when spraying the background area. When vacuum plating is a specified part of the design, plug masks are a must in order to protect the areas to be plated while color is sprayed on the other surfaces of the part.

Skilled Spraying Compensates For Loose Fitting Masks

A spray mask, conforming or shield type, should fit close. A gun using 45-lbs. pressure and or a lacquer at 21 seconds, as measured in a No. 2 Zahn cup, will yield an objectionable feather edge if the mask is only .003-in. away. A skilled operator may overcome this by favoring the mask. In many cases a gap of .020-in. is no problem to a skilled operator. Also, automatic equipment can be more easily set to favor faulty masking.

The question of costs enters into the tolerance picture. It can be understood that close tolerances on mask will result in higher costs. The difference in costs between electroforming and electro-plating (assuming that you have the equipment) is not great. The cost of hand cutting fine lips and fitting plugs can be extremely high. It is not unusual to have a mask maker take an hour to profile 6-in. of lip or fit a plug.

A last word in speaking of costs. The question often arises as to how many masks should the production department have. The best answer we like is "three," so that while one mask is in use, one can be in process of being washed and another will be drying after having been washed.

Specifications are based primarily on experience with a product or process. In preparing them the engineer must establish realistic objectives.

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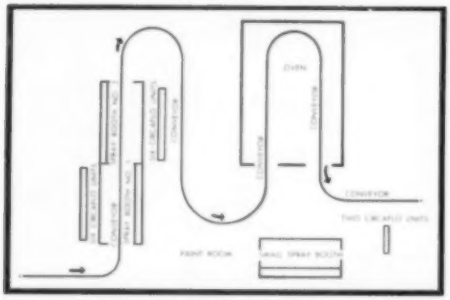

Continental uses a conveyor line passing through two water wash spray booths. These booths are side-by-side, faced oppositely. Operator in first booth sprays one side of case and operator in second booth sprays other side.

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An electric infrared tunnel in which the "heat" for baking the finish on new automobile bodies comes from T-3 quartz lamps. Photograph, courtesy of The Fostoria Corporation.

Let's Talk About Electric INFRARED OVENS

By P. C. Bardin

OVENS USED in connection with the finishing of various products are not restricted to bake ovens only. In some cases a burn-off oven is used for thermal degreasing, provided the product and the gauge of metal of which it is constructed, are suited to this method of removing oil and grease.

In practically all metal cleaning and surface preparation, whether it be in a power washer or an immersion tank system, a dry-off oven is used to remove all moisture before paint is applied. Some ovens are used to pre-heat the metal before painting; and, of course, bake ovens are used to bake the prime and finish coats. In many cases force-dry ovens are used in connection with the finishing of wood, plastics, ceramics, paper, etc.

Thus we see that ovens play an important part in the finishing of most products. Proper maintenance of the oven and strict observance

of schedules are important factors in controlling the quality of finish.

Electric radiant ovens are designed around the laws of optics and reflectors, based on the principle that the energy from the source is being projected onto the product.

Radiant Heat Sources; Several Types Available

Generally speaking, an electric radiant oven (or an infrared oven) may be fitted or equipped with any one of several different types of radiant heat units. The most popular types are ceramic generators, bulb lamps, metal sheathed rods, quartz tubes and quartz lamps.

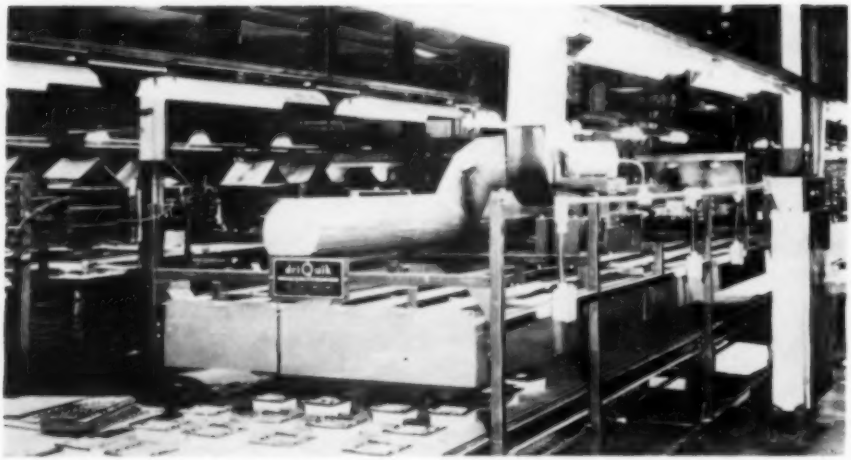
The electric incandescent lamp, where the filament operates at the "white" heat of more than 4100° F., is a source very rich in radiant energy, some 86% in the case of the quartz lamp. Most concerns that use it as the heat source design their ovens on a strict radiant principle, using gold plated or other highly reflective surfaces as a reflector behind the lamp. Often they design the equipment so these reflectors butt together to make a highly reflective tunnel enclosure through which a conveyor travels to move the parts or products being processed.

The nichrome resist wire, which is used as a spiral wire in a metallic sheath, in a quartz tube, or as a coil around or in a ceramic block, is widely used as a source of infrared heat in ovens.

Reflectors Distribute the Radiant Energy

For real efficiency and economical performance, each electrical heat source must incorporate a reflector of a certain shape. The function of the reflector is to accumulate and properly distribute radiant energy as it is generated by the

Baking the finish on steel caskets in a radiant heat oven in which the infrared rays come from ceramic units within round reflectors. Photo, courtesy of Dry Clime Lamp Corporation.



This infrared oven has two heat zones and complete automatic controls for product safety.

source. The design of this reflector is much more important than the type of material from which it is formed. Some engineers believe that too much stress has been placed on the type of material from which the reflector is made, while insufficient attention has been given to the efficiency value of the reflector's shape.

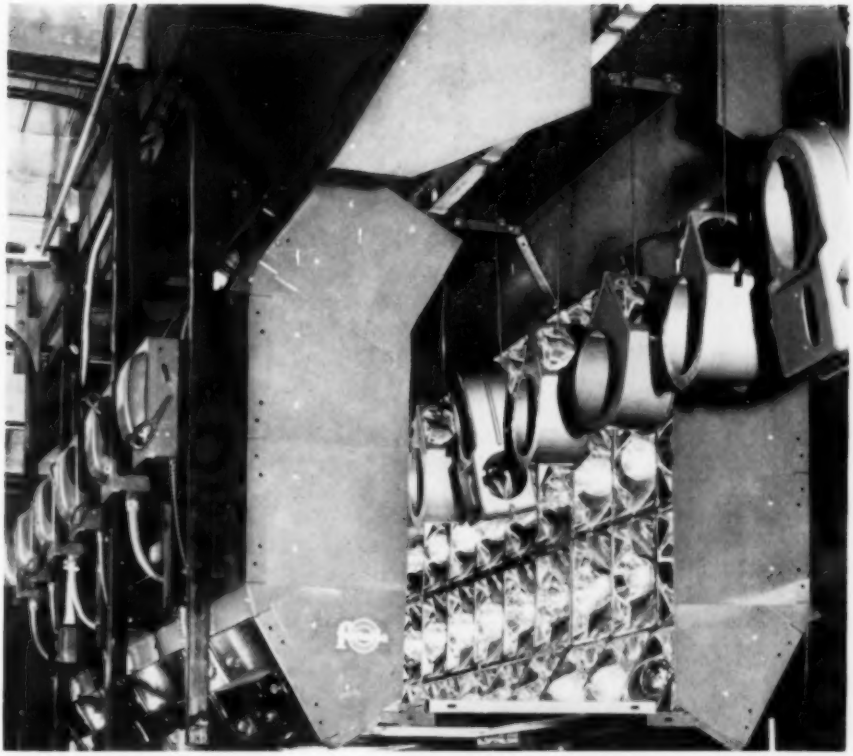
The efficient distribution of radiant energy is similar to what is used for the efficient distribution of light energy. The common flashlight can be cited as a good example; since its parabolic shaped reflector is highly efficient for the accumulation and distribution of light rays. This visible evidence seems to offer proof that the same type of reflective design will provide efficient distribution of infrared heat in radiant ovens.

Since radiant oven design is based on the transfer of energy by optical projection (and that projection takes place at the speed of light) the transfer of energy can be quite rapid. Generally the rate of product heating is dictated not by the oven but by the product itself.

Fast Build-up of Heat; Also a Fast Cool-off

Strictly radiant designed ovens, because they are not dependent upon stored oven wall heat and the build-up of a high ambient air temperature, have a very rapid thermal response (that is a very fast build-up and cool-off). Because of this they are frequently coupled to the conveyor line in batch operation to have the oven tripped on and off with the starting and stopping of the conveyor.

Because surfaces having high infrared reflection are readily available, such ovens can be efficient. In cases where the heat source is not as rich in radiant energy, good engineering and economics dictate a reasonable compromise



A straight radiant heat oven wherein infrared rays come from lamps in gold-plated wide-angle reflectors to bake the finish on formed sheet metal parts.

in the design to take best advantage of the source. It should be pointed out that the greater the convective component, the greater the thermal lag due to the time needed to secure an equilibrium.

Ovens of strictly radiant design have the advantage of producing as short an overall cycle as the product will accept. But they also have the disadvantage of being more critical due to this short cycle and their narrower tolerances. Greater thermal lag and higher overall ambient air temperature have the advantage of better "soak" to heat the hidden interior of complicated shapes to offset the disadvantage of poorer response. The higher efficiency of the strictly radiant design might be offset by the poorer receptivity of the shorter wave length energy.

Temperature Control; Different Heat Zones

Since one of the merits of radiant-type ovens is the speed in build-up of temperature in the product, it is necessary that accu-

rate temperature control be provided. Therefore, any prospective purchaser of electric radiant equipment should give serious consideration to temperature control when buying a radiant oven.

Another desirable feature that is possible with electric radiant ovens is the use of various temperature zones throughout the oven. With a correctly temperature zoned oven, greater production can often be achieved with less length of oven. As a result there can be a saving in the initial cost of the equipment and also a saving in the area required for installation of the oven.

Many improvements have been made in the finishes provided by various paint manufacturers throughout the country. Some of the reduction of time in baking cycles on certain finishes has been brought about through close cooperation between oven manufacturers and paint companies.

Design of Oven Depends upon Production Requirements

There are no mathematical formulas that can be applied to the correct sizing and engineering of a radiant oven for the various heat applications needed in the average manufacturing plant today. The only accurate method that can be employed for the correct designing and sizing of equipment is to have actual tests run on the finish and product before final engineering is completed. Such tests are always made available by most reputable companies.

Another feature to consider

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when purchasing an electric radiant oven is the life expectancy of the radiant source. Also, one should be sure that convenient arrangements have been provided for replacement of the infrared units.

Still another characteristic to investigate is to find out what arrangement has been provided for cleaning the reflective area of the individual units. Unless convenient arrangements have been provided, a great deal of expense can be attached to the proper maintenance of this equipment. And last, but not least, always find out what service arrangements are provided by the manufacturer.

Never accept the advertised claims of any radiant heat manufacturer as the final deciding factor in purchasing your radiant equipment, but request that proof be provided in your plant in advance of the purchase of such equipment.

These general statements show why there is a diversity of design concepts in the ovens offered by manufacturers—and because there are costly errors possible in designing one's own oven, it is a good economy to call in a reliable oven manufacturer to solve your problem. This is particularly true in paint baking ovens using radiant sources. Most solvents in these ovens are explosive, and adequate air movement must be introduced and adequately protected to assure not only oven exhaust, but absence of oven foul-up. Oven manufacturers are familiar with these problems and can provide the requisite safety. [END]

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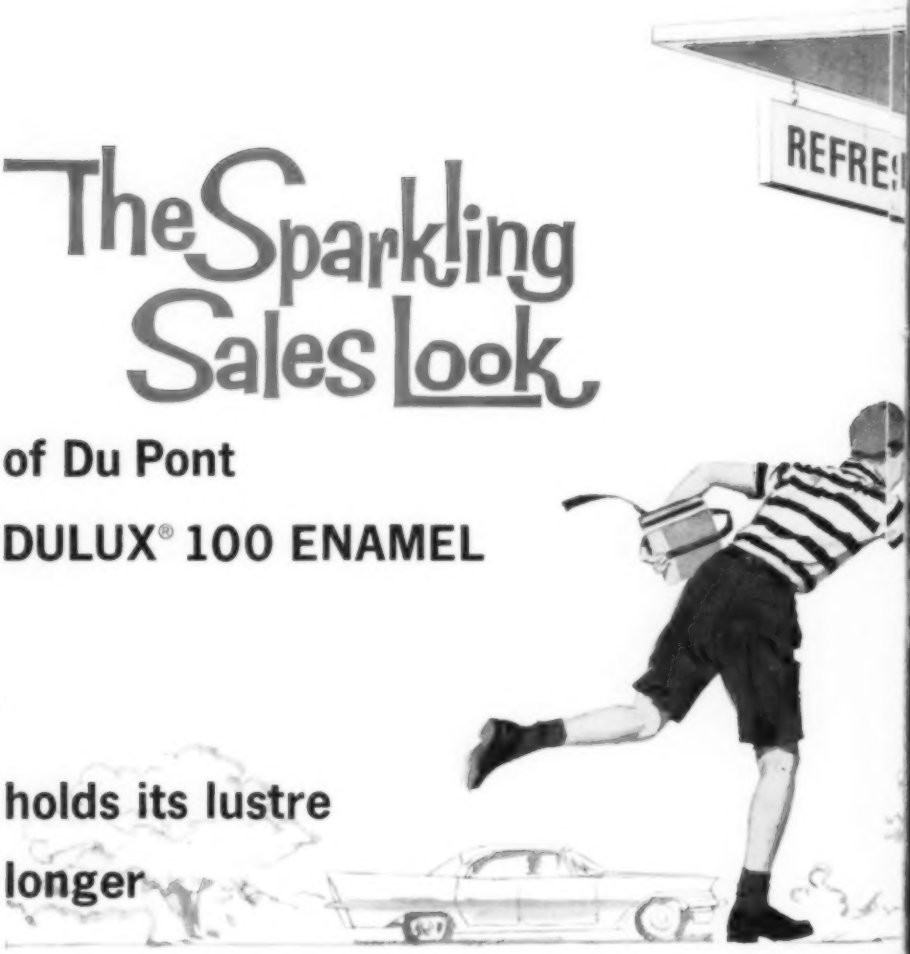


holds its lustre longer

Leading, sales-conscious manufacturers of vending machines specify Du Pont "Dulux" 100 Enamel. And with good reason. This dependable finish has a *balance* of properties that keeps products looking their appealing best ■ By actual test, "Dulux" 100 holds its luster 3 times longer than former outside enamels. It is non-bleeding . . . resists blistering, chipping and cracking despite hard wear and temperature extremes. After 18 to 24 months' exposure in a Florida Test Farm, "Dulux" 100 showed no more chalking than many conventional enamels at 6 to 8

months! ■ "Dulux" handles well on the line and is much harder and tougher after baking than conventional enamels. This makes the finished product much less likely to be marred on the production line, in transit or in the user's hands.

Get full details on "Dulux" 100 from your Du Pont Representative, or write: E. I. du Pont de Nemours & Co. (Inc.), 2502 Nemours Bldg., Wilmington 98, Del.

DU PONT INDUSTRIAL FINISHES

DU PONT

Better Things for Better Living...*through Chemistry*

177 on colored card.

EDITORIALS

Guard Against Fire During Plant Shut-Down

★ During any prolonged shut-down of the plant, your finishing department is particularly vulnerable to loss by fire. By "prolonged shut-downs" I mean periods of more than a day or so. An illustration would be a long holiday weekend or a plant shut-down for vacations. Also, during curtailed production because of business conditions, it may be necessary or desirable to close the plant.

First of all, the finishing supervisor or plant superintendent should make sure that a good maintenance program is set up in the finishing department. The department should be kept perfectly clean. Any accumulations of dust and dirt in corners and on top of spray booths are fire hazards. Open containers which are left setting around in this department, dirty rags and wiping materials may start fires as a result of spontaneous combustion.

Spray booths should always be cleaned before the plant is to be closed for several days, because any accumulation of overspray finishing materials in the spray booths, particularly dry booths, can cause a fire. Water-wash booths can catch fire too, but the hazard is not nearly as great as that of dry booths when the plant is closed.

Very few plants have adequate ventilation, therefore, when the plant is closed for several days the air becomes stale which, of course, increases the danger of fire from spontaneous combustion.

A number of serious fires have occurred while plants were closed. During the entire shut-down time the safety of your finishing department depends primarily on those who remain on the premises. This generally consists of an executive, a plant supervisor and some plant maintenance personnel during the day shift and, of course, the watchman at night.

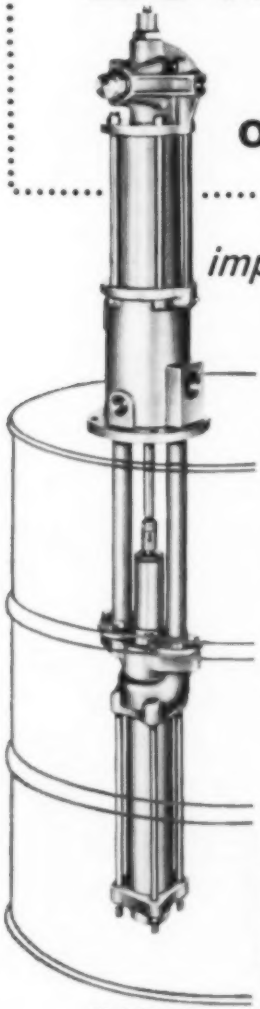
Someone should be responsible for checking the finishing department as often as three or four times a day, to see that no fire is about to start or has just started and is still very small. Also, the maintenance crew should check all electrical switches to be sure that they have been pulled —except those that control the fire protection alarms, night lights, etc. The night watchman should also watch the finishing department closely while the plant is closed over a long period of time. The automatic sprinkler system should be checked to make sure that it is working properly.

An important precaution which should be taken is to make sure that

★ *Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those used.*

Alemite VERSATAL LOW PRESSURE PUMPS

outperform all others...



Model 7884-A

improve your production and profit!

If you want a pump with dependable high volume, low pressure and exceptionally long life, this new Alemite pump is the best buy in the industry.

When your production line stops so does your profit! Protect yourself with a rugged, heavy-duty Versatal 7884-A Pump, so powerful it can serve 2 miles of pipeline! This dependable 4-to-1 ratio pump develops material pressure four times air pressure applied. It pumps from 55-gallon drums or paint vats. The submerged pump tube (air motor divorced from pump tube) retains possible by-pass of material within container, eliminates mess and waste.

Exclusive Alemite double-pump action draws material in . . . forces it out . . . simultaneously on both up and down piston stroke. Provides continuous flow of material under the most difficult operating conditions.

This Versatal Low Pressure Pump is only one of a complete line of heavy-duty pumps to fit your needs. For additional information contact your nearby Alemite distributor or write:

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CORPORATION

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every outside construction worker who does any work while the plant is down, or who has access to the plant, understands that smoking is prohibited.

Where any welding is done, plenty of the proper type of fire extinguishers should be kept close by, in case a spark should ignite a spot in the building and start a serious fire. It is also a very good practice to thoroughly wet the floor with water around where welding is being done in the finishing department. This will prevent the sparks from setting the floor on fire.

Be sure that all fire doors, which separate the finishing room from other rooms or buildings, are in good working condition and that they have fusable links on them so they will close automatically in case of a fire.

A little extra precaution will help to prevent a serious loss from fire while the plant is shut down.—*H. W. Chester.*

Where Power and Free Conveyors Can be Used

★ The possibilities of a combination power-driven and free-line overhead conveyor system are worth considering in many plants. Some finishing, by its very nature, must be an off-conveyor operation. For instance, the spray painting of multiple small objects which have previously been loaded on wire mesh screen trays. As each tray load is coated, it is placed in a multiple-rack until from 18 to 25 trays have been accumulated. Then the multiple rack is used to carry the entire load through an oven.

In such a case, a section of free-line conveyor can be used to accumulate tray loads of parts. When the multiple rack is filled, it is moved forward and switched onto the power-driven conveyor. All the operator has to do is to release the brake on the rack load of trays and it is carried forward by gravity to be picked up by the power-driven conveyor. As the loaded rack moves out, another rack containing unfinished parts rolls into position next to the spray booth. This arrangement permits fast spraying and avoids all manual handling of multiple racks. The same would apply to other off-conveyor painting or decorating operations.

The free conveyor, used in connection with a power-driven conveyor, may also be used in ovens for extending the baking time without slowing down the power-driven conveyor. This is comparable to the close-pack method of force drying wood products in drying rooms.

The free-line conveyor may also be used for the accumulation and storage of parts before or during assembly. The parts may be advanced to the power-driven conveyor as needed to insure a continuous supply being delivered without manual labor. This procedure has the added advantage of utilizing air-space, thus releasing valuable floor areas for production operations.—*P. C. B.*

Excess Paint Thickness Wastes Your Money

★ From time to time I have had an opportunity to measure the dry film thickness of various finishes on a variety of products. One fact impressed me. Often the film thickness varied widely from place to place on the same object. One appliance, for example, having a white enamel over a primer, had a total film thickness varying from 2.1 mils to 4.8 mils. Now, either 2.1 is too little or 4.8 too much. Ordinarily one would judge 4.8 mils as unnecessarily heavy

SO BEAUTIFUL THEY

Fool the Experts

Doors or panels printed in two colors in close register ON BOTH SIDES SIMULTANEOUSLY on the HAMANT DDV-2 Grainer shown here, are so beautiful only an expert would know they are printed. New profit possibilities are opened up in making run-of-the-mill panels as beautiful as the best selected panels which are available. And at very low cost, too! Get the facts. No obligation.

BRINGS THE POSSESSION OF BEAUTIFUL FINISHES WITHIN THE REACH OF MILLIONS

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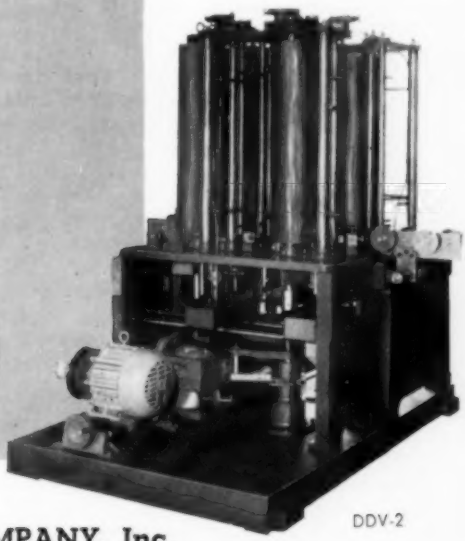
GRAINING MACHINES



DDV-2

The HAMANT TOOL COMPANY, Inc.

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in this case. If so, some finishing material is being wasted—and probably quite a bit of it too. Film thickness can also vary from one coated unit to another and from one day's production to another.

It strikes me as inconsistent for a company's management to make such an issue about a cost of a few cents a gallon more for the finishing material it buys, but at the same time be unconcerned about applying 10%, 20% or even 30% more finish than is wanted or needed on its products. You don't want to be putting on less than is needed—but not more either.

As a rule, thick films are more brittle and tend to chip more than thin ones. It is definitely to your advantage for the film thickness to be within the range you want over the entire coated article. In many factories, however, the finishing department seems to be concerned only with getting enough finish on, and if the film becomes a little heavy here and there—so what?

What can be done to get a more uniform thickness of finish coatings on the products painted? The answer will vary with each company. In some individual cases, little can be done from a practical point of view. In other cases much can be done. The answer will depend largely on the method of application. Changing the spray pattern (whether applied manually or automatically) may help.

Further training of the spraymen (or other personnel) could help. In dip tanks or flow coating operations, closer control of the paint viscosity should help. Automatic viscosity control might be considered.

The remedy will vary with the individual case. It may involve some investment of money. For anyone who uses an appreciable quantity of finishing materials, however, the savings could make it well worth while. —*George Grant.*

Custom Shop Cleaning And Surface Treating

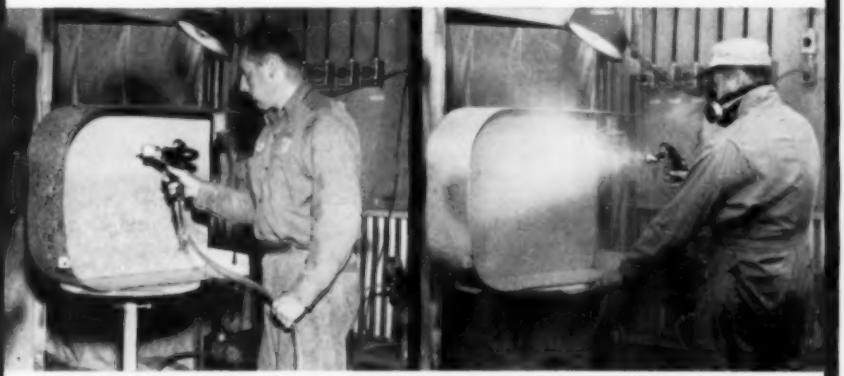
★ Metal cleaning and surface preparation for painting are sometimes big problems for the custom finishing shop. Products range from 2-in. square cold-rolled steel shapes to 18-in. diameter iron or aluminum castings. There are all sizes and shapes. Also, there are all types of soil, from buffing compounds to heavy grease and oil.

There is no complete answer to cover all conditions in all custom shops. One large shop seems to have solved the problem—at least insofar as they are concerned. They have a trichlorethylene vapor degreaser for some of the lighter soils that can be removed by this means. Then they have a 3-stage washer which includes a self-contained metal-belt conveyor on which parts and products are placed for cleaning. There is a good reason for this arrangement. A multitude of both sheet metal parts of various iron and aluminum castings are surface cleaned and treated at the same conveyor speed and with the same solutions.

Parts are brought to the infeed end of the washer in either large wood slat tote boxes or in small wire tote boxes. The smaller parts are dumped on the floor and the wire tote box is sent through the washer first so that it will be absolutely clean to receive the parts treated in the machine. The small parts on the floor are transferred to the washer conveyor by means of a hand shovel. Larger parts and castings are manually placed on the belt. The various parts are separated and placed in wire or wood slat tote boxes at the outfeed end of the washer.

How can all of these sizes and shaped parts be successfully treated in the washer? In the first stage a phosphoric acid cleaner is sprayed

which way do you spray?



ON THE RIGHT, A PICTURE OF WASTED PAINT. The overspray you see is typical of most old-fashioned spray systems. Fifty per cent or more of the paint never reaches the object to be painted at all. In addition to paint waste, this type of spray requires costly paint booths which makes excessive clean-up and maintenance charges necessary.

ON THE LEFT, NORDSON AIRLESS. The same product being sprayed by the same man; but, this time, little or no overspray — paint waste cut 25 per cent or more.

With an ordinary spray system, 600 parts of air are needed to atomize one part of paint. When the spray gun is triggered, the mass of air must go somewhere and it carries with it clouds of paint — much of which goes up the spray booth exhaust stack or settles where it is unwanted.

The Nordson Hot Airless System changes all that. *No* air is used for atomization so overspray is cut to a bare minimum. Important savings are made in both materjal and labor. Clean-up time is cut to the bone, housekeeping improved. We can show you how to cut painting costs and at the same time improve finish quality. Write for your free copy of the Nordson Hot Airless Spray Brochure.

NORDSON CORPORATION

55 JACKSON STREET • AMHERST OHIO

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over the parts at 175° F. This is followed by a hot water rinse at 185° F.; in the last stage, a chromic acid solution is applied at 185° F.

All of the solutions and the water rinse are sprayed on at 35-lbs. pressure. At these elevated temperatures and pressure, every area of the most intricate surface contour is thoroughly cleaned and treated. The parts air dry sufficiently for painting while in the tote boxes, by the time the fork-lift truck delivers them to the painting room. This is due to the high temperatures used in the washer.

Modest Sales Accounts—And Big Ones; A Lesson

A salesman for a small lacquer firm had built himself a comfortable yearly business. His customers were numerous, and 90% of them were small operators whose purchases were in the one to ten drum category. The other 10% were really big operators; they were the ones that worried him. During all the years he had called on these big accounts, they had never given him anything but the one to ten drum orders that he obtained from his small customers. He knew this was only token business—nothing like the big orders that some of his competitors received. Because he had always dreamed of landing a giant, and despite his generally excellent selling record, he considered himself something of a failure.

What he never realized was that his big customers knew what they were doing. They had quietly investigated the resources and capacity of his concern's plant. The report indicated that its capacity would be severely strained by any added load that big orders would create. And, there was no evidence of financial resources which an expansion of the plant's capacity would require. So they decided that putting such a burden on an old friend would be neither in their best interest nor in his.

Others have not always been so lucky. I have in mind a small paint company's sales manager who hired a salesman that wanted to leave a larger company. During the interview the prospective salesman was dropping big names all over the piace. This, the manager discounted as talk to impress, but he hired the fellow anyway.

To everyone's surprise the new salesman started to bring in some terrific orders almost immediately. Everyone got to work, factory hours were stretched and, sad to relate, old customers were neglected. Still the company could not keep up with the volume of new business. Finally, it was decided to expand. Money was obtained wherever it could be found. In came new equipment and new employees.

However, the new capacity had hardly begun to function before the volume of business began to taper off. Reason? Well, in the rush to get them out, the finishing materials simply did not come up to standard. Also, on looking around, it was discovered that several old customers had resented being neglected and they began to buy elsewhere. When the dust had settled, the house-on-fire salesman had departed, to beg for his old job back, a sadder and wiser man.

As for the wiser sales manager and his considerably poorer small company, it took them several years to regain those old customers, to say nothing of recouping their losses.—*K. Mc.*

Stritt With James B. Day & Co.

Mr. Jack D. Stritt has been appointed Vice President and Assistant to the President of James B. Day & Co., 1872 Clybourn Ave., Chicago, Illinois.

DuBois Chemicals ***sets the pace***

..... exclusive, cost-saving 6-point program :

1–Large, technically-trained service group
2–Strategically located warehouses
3–World's most complete line of cleaners
4–Half-century of technical experience
5–Continuing research
6–Cut costs—buy from one dependable source

DuBois provides cleaners for ferrous and non-ferrous metals, burnishing and tumbling, paint stripping, paint spray booth compounds, in-plant maintenance —every industrial need !

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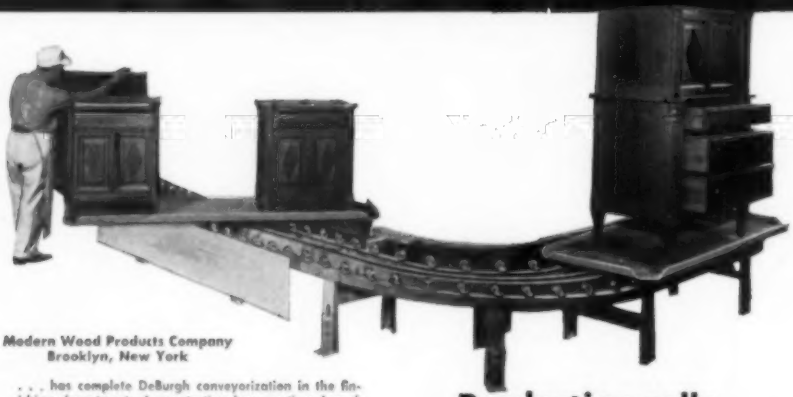
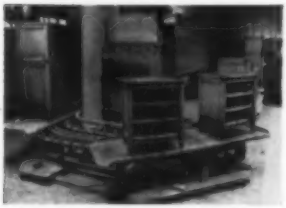
DE BURGH CONVEYORIZED FINISHING SYSTEMS



Modern Wood Products Company
Brooklyn, New York

. . . has complete DeBurgh conveyorization in the finishing department, demonstrating how continued work areas can be utilized to full furniture production.

Production rolls through tight areas to meet tight schedules



Convenient take-up adjustments are provided and conveyor speed is easily varied.

Pallets may be rotated freely along the line and are automatically aligned for certain finishing operations.

FLEXIBLE
DeBurgh Systems will fit the most complex floor layout. Conveyor speed is easily controlled.

CUT LABOR COSTS 50%
Patented features of the DeBurgh System allow fewer employees to do more work in less time.

35% LESS FLOOR SPACE
The "close pack" and "cycle system" features permit double use of floor area.

INCREASE PRODUCTION
No time lost between operations. Labor force is kept productively occupied.

LESS FATIGUE FOR LABOR
Production is delivered to the workmen at proper height and position on a firm, rotatable platform . . . no pulling, no lifting, no shoving.

ECONOMICAL
Investment in a DeBurgh System can be amortized in 10-15 months . . . can be installed or altered by your own maintenance crew.

Small plants and large industries alike use the distinct advantages of the DeBurgh Conveyor to increase their production and their profit. DeBurgh Systems will handle many types of products at one time . . . a fully powered system it negotiates horizontal and vertical curves with ease. It speeds up or slows down easily. There are no dead areas along the line. The DeBurgh System is working for you all the time. And it works for your workers, too!

PHONE WIRE OR WRITE!
Without obligation, our engineers will make an expert appraisal of your finishing system requirements.

Manufacturers of finishing systems for wood and metal products since 1873.

GEORGE KOCH SONS, INC.
EVANSVILLE 4, INDIANA

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ROCKFORD VARNISH

R/V

ROCKFORD, ILLINOIS

MANUFACTURERS OF PROTECTIVE AND DECORATIVE FINISHES

FULL PACKAGE

"So round, so firm . . ." you know the rest of it. The point we want to make, in this case, is that you get a "full package" of quality when you buy R/V "Real Value" Industrial Finishes. Our experienced people make and deliver *what* you want, *how* you want it, and *when* you want it. The package price? Let us quote you . . .

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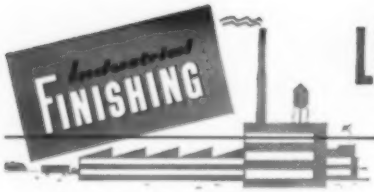

LETTERS from READERS

To Roller Coat Strip Stock

Referring to an inquiry in May issue, page 74, under the above title, we would like to get this same information too. In other words, the names and addresses of manufacturers of roller coaters and lithographing machinery.—*Metal Stamping Co.*

In a letter we are giving you this information.—*Editor.*

Consumption of Solvents in Electrostatic Painting

A representative of a very large firm that does market research, has posed a question with regard to the effect of electrostatic spraying on the consumption of solvents.

In checking with some of the electrostatic paint spray people, it seems to be agreed that they use more solvent to lower the viscosity of the paint, but "the paint goes farther." The general opinion is that the use of the electrostatic spray method has very little influence on the overall consumption of solvents.—*Editor.*

Trichlorethylene Cleaning

On page 86 of April issue, you have a letter from a company interested in trichlorethylene cleaning and painting equipment. Since we manufacture machinery for this process and our equipment was detailed in your Nov. 1960 issue, we would be interested in knowing the company's name.—*G. S. Blakeslee & Co.*

Information supplied.—*Editor.*

Cleaning and Painting Steel & Al. Strip

In April issue, pages 40-48, there is an article entitled, "Cleaning and Painting Steel and Aluminum Strip." It was written by Mr. Nathan Becker, and he discusses testing procedures, but does not describe them. We are interested in these test procedures and would like to get more information from Mr. Becker. We would like to have his address so that we can write to him.—*Eastman Kodak.*

The address of SeaView Industries is 3975 N. W. 25th St., Miami 42, Florida.—*Editor.*

Metal Cleaning Facilities

On page 74 of the May issue, under the above title, we note that M. M. Co. is interested in information on sources of metal cleaning and phosphatizing chemicals and equipment. The editor's note below this item states that you were giving names and addresses of manufacturers of equipment; we hope that The Spra-Con Co. was included in that list. If

SO **TOUGH** YET SO *Smooth*

National Sanders are built for **TOUGH** operation on busy production lines. As they are vibrationless, light weight, and easy to operate, they produce the *Smooth* surface so essential to a fine finish. For the woodworking industry National makes a complete line of electric or air driven sanders with straight-line or orbital action. Both single and double-pad air sanders are available. The popular Model 400 is shown below. Write for NEW folder today.

WITH ORIGINAL ORBITAL ACTION

"Ice Follies" Photo
Courtesy Shipstad and Johnson

NATIONAL NS SANDERS

National Sanders

NATIONAL-DETROIT, INC.
Rockford, Illinois

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not, we certainly would appreciate being advised of the name and address of this company.—*The Spra-Con Co.*

M. M. Co. is in Oakland, Calif. In a letter we are giving you their complete name and address.—*Editor.*

"Have you ever considered airless or electrostatic spraying, Mr. Elrod?"

Reclaiming Paint Sludge

After reading your note on page 78 of May issue, may we ask you the same information about "Paint Sludge Usage"?—*O. M. B., Bruges, Belgium.*

In a letter we are giving you names and addresses of concerns in the U. S. A. that process and reclaim paint sludge.—*Editor.*

We have been in the paint reclaiming business for 12 years. We would appreciate it if you would add our name to your list for future inquiries. We would also appreciate receiving the name of your readers whom you mention in your May issue.—*Riverside Laboratories, Geneva, Illinois.*

Lab. Roller Coater

Our laboratory is interested in manufacturers of laboratory roller coaters for paint products. We would appreciate the names of several possible suppliers.—*X. Co.*

In a letter we are naming several suppliers.—*Editor.*

Iridescence on Plastic

We too are interested in producing iridescent effects on plastic sheets (May issue, page 80). May we please have information on material and the know how?—*L., Inc.*

We have perfected a very fine accepted iridescent coating for plastic. Please send us the name of the firm wanting this material and we will send them a no-charge sample.—*Union Chemical Corp.*

Information supplied by letter to both of the above.—*Editor.*

Magic Sparkles

In your Feb. 1961 issue, page 115, mention is made of Metalflake, a product of the Dobeckmun Co. We manufacture a product called Magic Sparkles, which can be used in the same manner as described in your article.

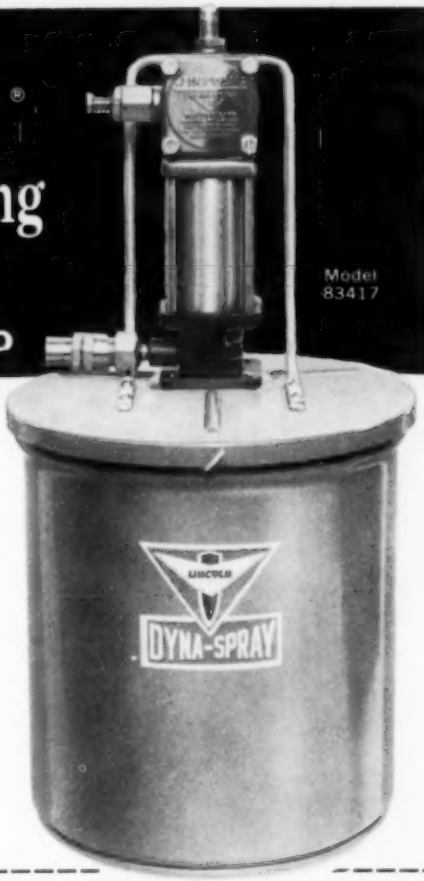
We have developed a method for spraying in a vehicle in one operation, not only the minute particles

SO COMPACT... one man can carry it...
SO POWERFUL... it's your best buy

the newest

Dyna-Spray® airless painting unit

for less than $200



Lincoln's newest Dyna-Spray (illustrated), mounted on a 5-gallon pail, is the most efficient and economical airless painting unit you can buy. The 44-to-1 ratio Power-Master pump is the most powerful available on this type equipment. The handle on the drum cover makes this unit easily portable. Simply attach your present Lincoln spray gun and hose, and take it anywhere . . . by hand, or on a two-wheel dolly. If you need a complete outfit, specify Lincoln Model MD-82. It includes a tungsten carbide-tipped "No-Air" gun, regulator and 25 feet of Nylon hose with static wire—all for less than $350. Dyna-Spray assures more even coating, minimum overspray, less fog on almost any finishing job. You can't match it for performance and cost.

Mail coupon now for detailed information.

LINCOLN ST. LOUIS

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ENGINEERING COMPANY

Division of The McNeil Machine & Engineering Co.
Dept. IF-7, 4010 Goodfellow Blvd., St. Louis 20, Mo.

Please send complete information on new Model 83417

Name_____ Title_____

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City_____ Zone____ State_____

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described in your article, but the larger particles up to 1/32-in. These Magic Sparkles can be sprayed on paper, textiles, plastic film, and also on metal.

We manufacture these particles in a variety of colors, sizes and shapes. —*Magic Sparkles, Inc., 858 Summer Ave., Newark 4, N. J.*

"Meet our great new sales team, Bill."

Paint for Sunken Letters

In the April issue you advised A. Mfg. Co. that you were sending them three sources of supply for paint for sunken letters. If it is possible, we would also like to obtain this information.—*R. N. Y.*

Information supplied.—*Editor.*

For Roller Coating

In the May 1961 issue, page 76, under the above heading, "W. & S. Co." is requesting a list of paint manufacturers that can supply lacquers for roller coater application.

We would appreciate it if you could supply us the name and address of this company, as we are very active in supplying materials for prefinishing hardwoods to be used in paneling. —*W. P. Fuller & Co., San Francisco.*

We hope you included our name in your source list of paint companies who specialize in plywood panel finishing sent to "W. & S." We would be glad to follow up with "W. & S." if you will send us their address.

Congratulations on your continued excellent articles and handling of industrial finishing subjects.—*O'Brien Corp., South Bend 21, Indiana.*

Plastisol Manufacturers

Is it possible to obtain a list of the leading chemical manufacturers of Plastisols? We would appreciate any information pertaining to Plastisols. —*K. Mfg. Co.*

We do not have a complete list of such concerns. (We will welcome letters from readers on this.).

Perhaps names could be obtained from the National Paint, Varnish & Lacquer Ass'n., 1500 Rhode Island Ave., Washington 5, D. C.—*Editor.*

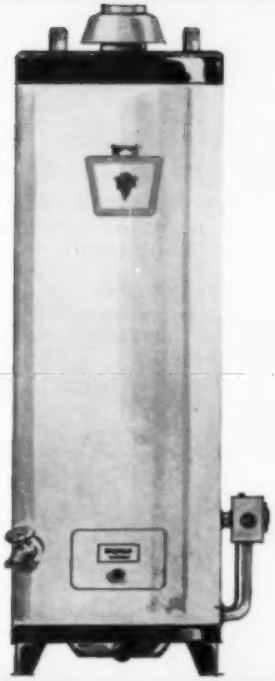
Are Advertisers Negligent?

For many years I have enjoyed reading *Industrial Finishing* which, as far as I am concerned, is the bible of the finishing industry.

I have a complaint, however—not against I. F. but some of the advertisers. Many times I have sent in cards with numbers circled for information on finishing equipment. Your Reader Service Dept. forwards this to your advertiser. At that point there seems to be a complete disregard for sending the information on

SERVING THE
INDUSTRIAL SOUTHEAST
Since ... 1910

Our tailor made FINISHES* for metal products include white baking enamels for water heaters!



INDUSTRIAL FINISHES* DIVISION
GILMAN PAINT & VARNISH CO.
CHATTANOOGA, TENNESSEE

For more data, circle 186 on colored card.

the subject article. They send me their standard catalog—and, of course, the new item is never in it. . . . What a waste of good money for an advertiser to stir up interest in a new item and then consistently fail to send the correct information to an inquiry! Maybe you can advise them on this shortcoming.—*A. R.*

Editor's Note: One advertiser to whom we sent a copy of A. R.'s letter (and whom A. R. named) has replied as follows:

"We appreciate your sending us this information. It is evident that we are not handling our inquiries as well as we should. We are, however, taking steps to correct this fault."

Non-Glare for Windows

Please send us the names and addresses of several companies who can supply "non-glare" tinting paint for window glass exposed to the sun, as mentioned in previous "Letters from Readers."—*A. E. Co.*

Information supplied.—*Editor.*

"Like you, Muggins, it's only half baked!"

Retracting Hose Reel

We would be interested in receiving the manufacturer's name that produces the retracting reel described in an article on page 110 of May issue.—*W. Casket Co.*

It's Samuel Moore & Co., Mantua, Ohio.—*Editor.*

Who Makes Richlow Enamel?

I would like to have one quart of Richlow Brass semi-gloss baking enamel sent to me air mail, special delivery.—*M. O., Nashville, Tenn.*

We do not stock finishing materials and we cannot find who makes the brand of material you want. In a letter we are naming a few firms who may be able to supply a similar material.—*Editor.*

Stripping Compound

Do you by any chance have an address on Cee-Bee Chemical Co.?

Also, can you give us any information on who else may manufacture liquid stripping compound for Epon adhesive? We need this information for local government agency.—*The B. Paint Co.*

In a letter we are giving you the names and addresses of several suppliers of stripping compounds some of which are probably suitable for stripping off Epon adhesive.—*Editor.*

Announcing
the new
GRACO
MONARK HYDRA-SPRAY

PRODUCTION MODEL

✓CHECK THESE FEATURES!

1. A low cost 5 gallon airless unit.
2. Super-portable! Easily carried. Weighs only 46 pounds, yet does the work of units much heavier.
3. Excellent for *fast* multi-color work. Instant-latch cover and ease of cleaning gives the Monark "greased lightning" color changing speed!
4. Airless operation eliminates over-spray and bounce-back . . . *saves time and materials!*
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6. Works direct from 1 or 5 gallon containers.
7. Superbly constructed to give years of trouble-free service. Backed by the Gray Company's reputation of producing only the best!

WHAT MORE COULD YOU WANT!

For more details, see your GRACO dealer or write:

TRY IT BEFORE YOU BUY!

GRACO HYDRA-*Spray*

GRAY COMPANY, INC. • *ENGINEERS AND MANUFACTURERS*
73 Graco Square, Minneapolis 13, Minn.

See Phone Book Yellow Pages, Spraying, for Graco Suppliers

For more data, circle 187 on colored card.

QUESTIONS and ANSWERS

Why Paint Doesn't Stick To Fiberglas?

Our firm manufactures exhibits. We are currently using a great number of fiberglas panels but are having trouble with paint not adhering to the fiberglass. Do you know of a primer that will bond to fiberglas and later hold a finishing coat of lacquer?—*D. & P.*

I suggest that you consult your supplier of finish materials on a lacquer base primer, especially controlled for application on fiberglas.

Another idea would be to eliminate both the primer and the lacquer top coat and substitute a pigmented polyester finish on the fiberglas. This would be a one-coat job.—*P.C. Bardin.*

After a discussion of this problem with three large paint manufactures, the consensus of opinion is that the trouble is probably the mold release used in manufacturing the fiberglas panels. If the release agent is a wax, then cleaning the surface with alcohol should remove any residual wax. If the release agent is a silicone it would be somewhat more difficult, but not impossible. It would be rather like removing a silicone polish before repainting—plenty of clean rags and a suitable solvent. So much for the preliminary cleaning.

The preferred coating material is an epoxy type. To my certain knowledge there are three recommended materials available here on the Pacific Coast. An inquiry addressed to Western Fiberglas Co. in San Francisco should be fruitful. This company is a fiberglas specialist and a coating is manufactured for them and they use it for this very purpose.

It should be noted too that the boat manufacturers are painting with epoxy coatings (there is a wide color range) and no particular difficulties are reported. This suggests an inquiry to that source.

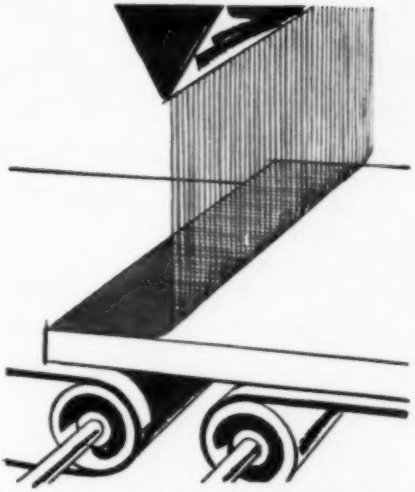
To sum it up: Clean carefully, probably using alcohol; then apply an epoxy either with or without a primer. If nitrocellulose lacquer is to be the finish coat, then a modified wash primer, like the "metal etching primers," or a modified alkyd primer could be used, followed by the lacquer. —*C. R. Brown.*

Quick Color Changes; Cleaning Paint Lines

We are presently working on a method to cut our "down time" during an average of 15 paint changes per 8-hour shift.

We have circulating systems for our main colors; however, we have too many "odd-ball" colors to warrant a system for every color. Pressure tanks are now used for the latter. Therefore, we are thinking of using two small circulating systems (approx. 85-ft. each) and flushing each line out after a particular color.

OPERATION "CURTAIN COATER"!



NEWEST ADDITION TO SPRUANCE ADVANCED RESEARCH

Representing an entirely new finishing principle, this Curtain Coater marks another step forward in Spruance research and development. New finishes are tested, Spruance custom finish service extended and new techniques developed. It also points the way to greater speed in application and important savings in materials.

In joining other Spruance laboratory equipment, including airless and dual-headed sprayers, the Curtain Coater makes possible advanced investigation of newer glamour finishes . . . polyester, epoxy, polyurethane, butyrate and acrylic.

Spruance Advanced Research is at your service . . . always ready to help you benefit from newest finishes and latest finishing techniques.
For full details, manufacturers on the eastern seaboard, write:

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fine finishes

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Wood Finish Originals • Metal Finishes • Maintenance Paint Products

For more data, circle 188 on colored card.

This setup would have the sprayers spraying from one line while the other line was being cleared and readied for another color. Our paint stockman would do the setup work and would leave the sprayers to moving the spray gun hose from the finished color to the cleaner and then to the new color (quick detachable couplings would be used).

The type of material we are using is an alkyd-melamine type paint with a Solvesso type thinner and fast-acting cleaner. Herein lies the controversial question: Can we assume that the cleaner will sufficiently flush out the finished color so as not to change the shade of the second color that will be used in the same line? Also, could we expect to use the cleaner several times, or would a reclaiming system be advisable? If so, what type?

We would appreciate any comments you would have on the above setup. We are conidering the ——— type pump for the circulating system.—*M. R. Co.*

Your plan might work if you installed an air and solvent line with a common or single outlet equipped with a snap-on coupling. In this way the spray operator can flush the material hose and spray gun only before snapping the hose onto the second pipe outlet for the new color. Only about 30 seconds are required to flush the material hose, say about 10 to 12-ft. long and the spray gun, provided aerated solvent is used. It would seem to me that a much longer period of time would be required to properly flush out an 85-ft. long pipe line plus a 10 to 12-ft. material hose and spray gun. Just how much longer, I do not know; however, in my opinion it would remove the operation from the class of a fast color change.

As for using the same solvent for cleaning all lines over and over again, I do not think this advisable. The solvent used for cleaning one color line can be retained for use in thinning that color, but not for any other color. For flushing out the material hose and spray gun with aerated solvent, no attempt is made to salvage the solvent. It is blown into the waterwash spray booth.

It would seem to me that your best plan would be to use pipe circulating systems for the standard colors and, if possible, use shorter circulating systems for perhaps some of the most used odd colors; then rely on pressurance tanks for the off-and-on stray colors. If everything in the spray booth is equipped with snap-on couplings, and if you install combination solvent and compressed air lines into the booth to obtain aerated solvent for cleaning material hose and spray gun only, you should be able to make fast, economical color changes. —*P. C. Bardin.*

A local (San Francisco, Calif.) automobile assembly plant has worked out this problem in the following manner: First, there is a circulating system from the paint supply source to the spray booth and return. At the booth there is a quick detachable fluid connection. On the gun itself there is a restricted fluid passage regulator; this is right at the gun head. The gun, which was developed for the automotive manufacturers several years ago, is also a restricted passage gun. This is a production setup and the restricted passage feature allows plenty of material to be sprayed for continuous production work. The advantage is that at any time, there is very little paint material between the quick-detachable connection and the tip of the spray gun.

In order to change from one color to another or even from one kind of material to another, your operator just disconnects from one line and

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NOW... A ONE-COAT FINISH FOR EXTERIOR ELECTRICAL CLOSURES

Cut paint/bake time in half with new SUPER NUBELITE® thermosetting acrylic finish

June 27, 1961—The Glidden Company announces a new one-coat finish for electrical enclosures with the weather-resisting properties of traditional two-coat systems.

This newest in the family of Glidden one-coat SUPER NUBELITE finishes has just passed the stringent tests of a leading independent testing institution and is approved for suitable exterior electrical applications.

The battery of tests included salt spray, ultra-violet light and water, moist carbon dioxide-sulphur dioxide and moist hydrogen sulphide—all proving the durability of SUPER NUBELITE.

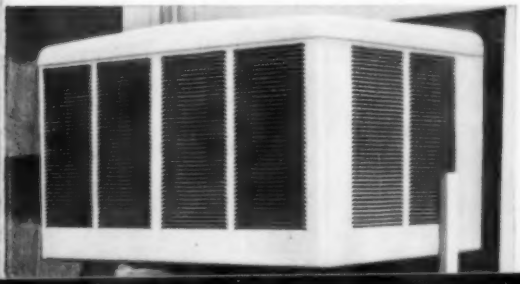
SUPER NUBELITE is applied in a film thickness of 1.5 mils and can attain theoretical coverage of 700 square feet per gallon per mil.

Other one-coat SUPER NUBELITE finishes are already in production on refrigerators, freezers and fluorescent light fixtures. Two-coat SUPER NUBELITE is now being used on clothes washers, dryers and other electrical appliances.

For complete information on one-coat SUPER NUBELITE finishes, call your Glidden representative or write direct.

Key to approval by leading independent testing institution was salt spray test. Above panel, coated with one-coat SUPER NUBELITE shows creepage of less than 1/16 in. along scribes after 2208 hours exposure.

Air conditioners and other exterior electrical enclosures can be finished with SUPER NUBELITE for superior weather protection at one-coat economy.



QUALITY Glidden PRODUCTS

THE GLIDDEN COMPANY
INDUSTRIAL PAINT DIVISION
900 Union Commerce Building
Cleveland 14, Ohio

hooks into the next line. Then, with the gun wide open for about three or four seconds, he clears the regulator and the gun so that work can proceed with the new color. I understand that there are more than one of these restricted passage guns on the market. They are light weight; only one gun and regulator are needed for each operator; and the cost is quite reasonable. The system is in successful operation; it would bear investigation.

If I see your picture correctly, you could use the pressure pots and have the quick detachable connection at the gun end of the hose; then, by using the gun and regulator described above, it is merely a matter of flushing out the very small amount of material in the gun and the regulator. —*C. R. Brown.*

Finished Red Cedar Gives Us Problems

Our problem is this: We call on several accounts that manufacture plaques, souvenir boxes, etc., out of red cedar wood. This wood is cut in the midwest region around northern Arkansas and is kiln dried by the supplier.

All of these manufacturers use basically the same finishing system. That is a hot sprayed high gloss lacquer, nitrocellulose base, ranging in solids from 20% to 35% non-volatiles. Some companies apply one heavy coat, while others spray two or three lighter coats. All air dry. All lacquered articles are allowed to dry at least overnight before packing.

Now sometimes, but not always, an oily deposit appears seemingly from nowhere on the lacquered surface. Occasionally, it appears before they are packed but more often after they are packed and stored. Being inclosed seems to aggravate the condition and the surface appears to "sweat."

We partially alleviated the problem by suggesting that the pieces be packed back to back, that is, unlacquered sides together instead of a lacquered surface against an unfinished surface.

As I've never seen this situation in any other type of wood, I believe that it is the nature of the red cedar. Any light you could shed on this matter would be appreciated.—*K.G. M., Industrial Sales.*

I called on some of the bearded experts and they tell me that they have had the most success in finishing red cedar by using a vinyl sealer coat first, one having 8% to 10% solids. Then, when this sealer coat is dry, scuff sand and apply the top coat of lacquer. This sealer is claimed to be superior to shellac. The vinyl sealer has some nitrocellulose lacquer mixed with it, hence the top coat of lacquer is compatible.—*P. C. Bardin.*

Cedar, being of the pine family, will have a certain amount of rosin, turpentine, tar and/or pitch that is not removed by kiln drying. Some of these products might cause the oily substance. Cedar oil is also a possible cause.

Now that we know some of the possible causes of the oil, we must find a way to retain the oil in the wood. You say that your customers use from one heavy coat of high solids lacquer to three light ones, not mentioning the use of a sealer. It is possible that a good coat of sealer over the entire product, so as to not have any exposed wood, would seal in any oily substance that might be in the wood.

If a sealer is not desired, or if it is too expensive for the type of product, coat the entire plaque or box with lacquer, leaving no exposed parts. From what you say in your

CREATIVE RESEARCH • QUALITY PRODUCTS • PROFESSIONAL SERVICE

FERLON REMOVES RUST, CLEANS METAL, STRIPS PAINT—ALL AT ONCE!

FERLON® is Wyandotte's heavy-duty alkaline cleaning and derusting compound. It quickly and efficiently removes rust, paint, oil, and grease from steel and cast iron. FERLON won't injure sound metal and will not etch. It's perfect for use on expensive, highly machined, close tolerance precision parts. Your Wyandotte man will gladly demonstrate FERLON for you. Call him in.

Wyandotte Chemicals

J. B. FORD DIVISION

WYANDOTTE, MICHIGAN • LOS NIETOS, CALIFORNIA • ATLANTA, GEORGIA

For more data, circle 174 on colored card.

letter, by placing an unfinished side to unfinished, and finished side to finished side, you partially eliminated the problem—this shows that the oily substance is coming from out of the unsealed wood. In open air, the oil will dry away or evaporate, but closed up or encased in cartons, the oil will not evaporate.—*Harold A. Labhart.*

As you have surmised, this is a phenomena peculiar to some of the cedars. It is this property that makes them aromatic. It is the reason they are useful for cedar chests and lining clothes closets. It is also the reason why a finish of a nitrocellulose lacquer will probably fail prematurely, although this is probably not important on goods of this nature.

Any finishing system for cedars should begin with a first coat of pure white shellac. It is the only material which has been successful in sealing such exudations.

Varnishes made with the newer Urethane resins have shown great promise on this type of wood. However, they are still too new to have been thoroughly evaluated.

On the other hand, the value of shellac has been proven. Since you prabably neither make or sell shellac, I wish there was some other answer. But, to the best of my knowledge, nothing else will do the trick.—*Geo. Conrad.*

ASA Color Standards

Since many of our customers list their paint type and color requirements by ASA Standards Numbers only, and our paint suppliers are not always familiar with this numbering system, we often find it a time-consuming job to identify these paints.

Do you know if the American Standards Association would be able to furnish us with information that would aid us in identifying these numbers? If so, could you give us the address to which we could send this request?—*Controls.*

The only numbering code we have is contained in our American Standard Gray Finishes for Industrial Apparatus and Equipment, Z55.1-1950, which you will find listed on page 43 of the copy of the Catalog of American Standards which we are sending you. You will note that there are also color chips available which represent the four gray finishes.

If you think it is this numbering system your customers refer to, doubtless you will wish to purchase a copy of the standard and a set of the color chips. We shall be glad to receive your orders. Instructions for the purchase of standards are given on page 2 of the catalog.—*American Standards Association, Inc., 10 E. 40th St., New York 16, N. Y.*

What Finish For Oustide Honduras Mahogany?

We have received an inquiry in connection with the finishing of a large mural carved from Honduras mahogany planks, to be fully exposed to the weather. The coating should be clear or very lightly pigmented and of the wood sealer type; hence varnishes and materials based on polyester, epoxy and polyurethane resins would not be suitable for the purpose.

It occurs to us that you might list in your files several suppliers who manufacture coatings capable of meeting the severe demands of this specialized application. Any suggestions will be greatly appreciated.—*D.F.*

There is an interesting and informative article about finishing wood

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FULL INFORMATION FURNISHED WITHOUT CHARGE OR OBLIGATION—REFERENCES

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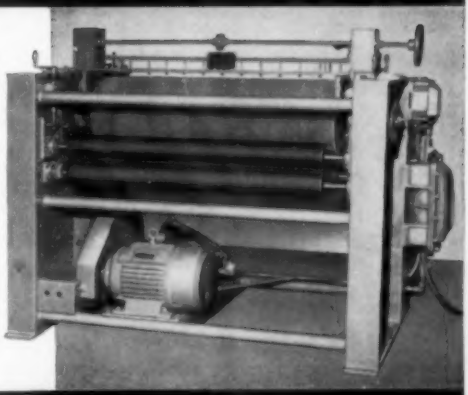
What can a UNI-FINISHER do for you?

Solve finishing problems with this NEW impregnated nylon wheel sanding machine

The Uni-Finisher applies a light abrasive action to metal, wood or plastic sheets from 6" to 50" wide, 0" to 4" thick, at a rate of 2600 surface ft./min. Ideal for a variety of metal polishing operations, for finish white wood sanding, sealer and filler coat sanding, and polish sanding. Furnished with powered feed rolls and off bearing rolls, or endless belt feed, depending upon application. Can be supplied as integral part of automatic conveyorized finishing system.



Send for the complete story!

THE
UNION TOOL CORPORATION
818 N. DETROIT ST., WARSAW, IND.

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NEW H.S.R. SYSTEM*
(HI-SOL Reducer)

AVE up to 1/3

of your TOTAL PAINT COSTS

RESULTS PROVED

Actual in-use tests in customers' plants and by an independent testing laboratory (names on request) prove savings up to ⅓ of total paint bill. Best of all, finish quality is improved and the required mil thickness fully maintained.

*H.S.R. (HI-SOL Reducer) System uses a unique solvent blend formulated to work at low air pressure which puts more paint on the product.

Write for FREE sample or a No-Risk Trial Drum of HI-SOL Enamel Reducer.

POTTER Paint Co. Inc.
Cortland 1, New York
or Cambridge City 1, Indiana
Write to your nearest location.

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carvings in the May 1960 issue of this magazine, pages 66 to 72. This article details the finishing of Honduras mahogany carvings and while this is about furniture for use indoors, the general procedure is quite similar to your problem. Of course, the top coats as well as the stain would have to be different.

The stain should be a pigment wiping stain composed of color fast earth colors. Most stains employed for interior work would not be light fast to continuous outside exposure. The filler would probably be the same. When it comes to the actual film forming materials, there is a decided difference.

Spar varnishes or any formulation based on Bakelite or a similar resin would tend to darken somewhat on exposure to sunlight. Polyesters are out of the question if for no other reason than the fact that refinishing would be a big problem.

The penetrating oil finishes, such as the so called "long oils," would have to be recoated probably every 18 months or so. Whenever one considers a clear finish for wood to be exposed to the weather, there is the film life to consider. Two or three years seems to be the maximum.

An epoxy ester, made with soya or castor fatty acids, would be pale in color with very little yellowing, but it might chalk; however it could be recoated. The only real promising suggestion I have been able to develop is a long-oil alkyd varnish. This can be pale in color, with very little yellowing, good flexibility, and it should be available from any paint manufacturer.

The complete problem should be submitted to an industrial salesman of a reputable finish manufacturer. However, find out what sealer, stain and filler the top coat will tolerate. Follow the supplier's recommendations exactly.—*C. R. Brown.*

Use Trucks That Have Larger Wheels

THE PAINT industry has always been plagued by the fact that its employees have an awful lot of unavoidable lugging and lifting to do. Despite all of the progress made in adopting and using pumps, conveyors and gravity flowing facilities, there still remains plenty of big, heavy drums that must be shifted and hoisted endlessly through plants and yards.

Aware of this need, equipment manufacturers have designed a whole series of ingenious products aimed at making this work easier, faster and safer. They have filled a definite need in the paint industry; these facilities enable one man to pick up a drum, move it to any spot, raise it to any height or tilt it to any angle. And, they keep the employees off the sacroiliac list. Many companies have bought them, many more are planning to do so. Their acceptance has been general and well deserved.

However, may I suggest a word of advice? These lifters are almost always offered with two wheel sizes—the smaller solid-tired wheels and the larger wheels with pneumatic tires. Before buying something with small wheels, take a look at your floors. Unless they are in almost perfect condition, it is wise to invest in equipment that has the larger wheels. The big wheels will roll over obstacles and depressions that would trip up the smaller size wheels; they have the leverage to swivel and roll with half the effort

G-K
WASHERS FOR INDUSTRY
Rotary Drum Washer designed for cleaning small parts
• INDUSTRIAL FUME & DUST REMOVAL SYSTEMS
• WASHERS, OVENS, SPRAY BOOTHS
• INDUSTRIAL SHEET METAL FABRICATION

Designers, Builders and Installers of Washers to handle any industrial process, and built to the exact specifications determined by our complete engineering analysis of your job requirements.

Write for our complete General Catalog

Gallagher-Kaiser CORPORATION

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or man-power. And finally, those soft tires will not make your factory floors any worse than they are.—*Ken MacKenzie.*

James Jarvis; Diversey Corp.

James D. Jarvis has been named to the newly created position of director of sales personnel recruitment for The Diversey Corp. Before joining Diversey, Mr. Jarvis was with another Chicago company for four years.

Saves My Clothes While I Demonstrate Paints

ONE OF THE first principles of good salesmanship is that one should look clean, neat and well groomed. While it is not necessary to be a "Dapper Dan," the basic essentials of the work require a clean shirt, a fresh shave, and polished shoes. There is no exception for those salesmen who sell or service paint.

Unfortunately, all salesmen and service men who work with paint must, on occasion, get right in and demonstrate it. And that, men, is very rough on clean "dress-up" clothes. With old clothes, I can stir, mix and pour paint all day long without splashing a drop. But I say, no one can ever touch paint, while dressed in clean business clothes, without getting splashed. The best protection for your suit is a shop coat, preferably one that will button up closely around your neck. A scarf or a cowboy type handkerchief will shield you collar and tie.

Shoes are another matter. Years ago I used to clean mine with thinner.

A NEW BULLETIN THAT'S NEWS!

the most complete information ever printed on

SPRAY NOZZLES

for metal cleaning, washing, pickling, rinsing, fogging and coating. Includes spray nozzle reference chart covering every application. For your free copy, just write for Bulletin 106.

SPRAYING SYSTEMS CO.
3240 Randolph Street
Bellwood, Illinois

America's most complete line of spray nozzles.

For more data, circle 193 on colored card.

This removed the paint; it also removed the polish and any other finish the tanner had applied. Soon the thread rotted and parted. Cracks appeared, multiplying until my shoes resembled alligator hide. Much too soon, the best shoes looked like "Charley Chaplins."

Then, one day I accidentally found the answer. I wore overshoes in a plant and forgot to remove them. In fact, I left them on all day. When I did take them off that night they were spotted, but my shoes were clean and shiny. I never did clean those overshoes but I have carried them ever since. They are probably the most multicolored overshoes in the world. But my bill for dress shoes has been cut in half.—*K. Mack.*

It's the color excitement and fashion rightness of merchandise that make it desirable to the customers.

Grayden, Tech. Dir. for O'Brien

Hugo N. Grayden has been named technical director for the industrial finishes division of The O'Brien Corp., according to John C. Mull, V. P. in charge of development.

Grayden, formerly head of the appliances finishes division of another company, has had ten years' experience in industrial finishes research and development, including two years each with concerns in Chicago, Illinois.

Baggott, Paint Eng. for P.P.G.Co.

Mr. John W. Baggott has been appointed chief engineer for the Paint & Brush Division of Pittsburgh Plate Glass Co.

Prior to joining P. P. G. Co. Mr. Baggott had extensive experience in paint manufacturing.

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COMPLETE FINISHING SYSTEMS

POWER SPRAY WASHERS
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Treating Steel For A Better Paint Bond

WHY DOESN'T paint bond readily to a bare untreated steel surface? There are numerous reasons for this but some of the more common causes of poor paint adhesion to bare steel are as follows:

1) A thin film of oil is often present on the surface of sheet steel before painting. This oil may have been applied to prevent the steel from rusting, or to serve as a lubricant when the sheet steel was cut and formed into various shapes. The thin film of oil prevents the paint from making intimate contact with the steel surface and as a result the coating readily peels.

2) Due to the smoothness of the surfaces of clean sheet steel, the paint film doesn't interlock with surface crystals, and the only bond is the adhesive force of the paint to the steel. This force weakens as the paint becomes dry and brittle with age. Sometimes this peeling may occur after a few months of service.

3) The steel surface may be rusty. Since rust is naturally brittle, with the excess rust being flaky or dusty, and since the paint does not penetrate it to any extent, the bond is only as strong as the rust itself. Any mechanical action on the painted surface, if it disturbs the underlying rust, will damage the paint bond, and a flaking of the paint will result.

4) Untreated sheet steel may rust under the paint film, where

Ideal for Hot Weather Use!

New Efficiency

The sensational new FLEX-A-PRENE Paint Mask keeps out paint pigments and solvents with amazing efficiency, yet it's light (just 1 ounce), comfortable and so easy to talk and breathe through you hardly know you're wearing it.

New Economy

FLEX-A-PRENE's low first cost is only part of the story. Most important savings come from its endurance in service and time saved through less frequent filter replacements. You can expect at least 100 hours of exposure before filter replacement is necessary.

Sample: $1.50 postpaid
(INDUSTRIAL PRICE ONLY)

FLEXO Products, Inc. Westlake, Ohio

For more data, circle 195 on colored card.

the paint is scratched through to the base metal. Rusting starts at the scratch and slowly spreads under the film of paint. The paint film is lifted by the rust and a blistered effect results.

Various methods are available for overcoming these natural obstacles. For example, the surface oil may be removed by degreasing with solvents or solvent vapors, or by alkaline cleaning. However, if this operation is not done with exacting care and continuous attention, some oil or alkaline residues (which in time would spoil the paint bond) may still be left on the surfaces.

Rust may be removed by pickling the steel in acid, but a freshly pickled surface is very susceptible to further rusting. The surface might be given a microscopic etch, to provide tooth, by pickling or phosphate-coating it.

A specially compounded phosphating material, one of which is available as a white powder and is rapid in action, produces a coating on steel which is an excellent paint-base. The powder is used in concentrations of 1¼ to 4-oz. per gallon of water at 170° to 180° F. Parts are dipped in or sprayed with the solution for several minutes, rinsed, passivated and dried.

Phosphate compounds are available for still tank work and for wash machine operation. While basically both produce the same results, one is especially designed for giving maximum cleaning action in the washing machine, coupled with negligible foaming. While both solutions will develop some sludge during use, there is no tendency for the sludge to form scale on the tank walls or heating coils.

Due to its cleaning action, this phosphatizing-cleaning compound removes light oils and forms a thin strong coating of iron phosphate on the surface of the steel. The color of

SPEEDIP CENTRIFUGAL COATERS

for: Enameling and Lacquering uniform or irregularly shaped parts; one ounce to several pounds; up to 20" long; Brass, Steel, Plastic or Wood parts; also for Waxing and Oil Coating.

FAST AUTOMATIC OPERATION FOR COATING PARTS IN BULK!

It's fast—30 loads per hour.

Capacity: Available in three models—312 cu. in. to 4400 cu. in. Maximum Load—300 lbs.

Saves Up to 80% of Material

Simple operation . . . automatically dip and then spin off all excess coating material.

All operations are automatic within the machine. No additional outside tanks required; no cleaning of machine necessary; no loss of material.

Write for further information and send your product to be coated.

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MACHINE COMPANY

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Simply clean the surface, and you're ready for Uni-Clad ... the revolutionary, low-cost, premium-quality metal coating that bakes to a super-hard yet flexible finish. Won't chip, peel. Tremendous chemical resistance. Salt spray and humidity tests show no effect at 2000 hours. One package, dip or spray application. Supplied in colors, clears, flat or gloss. Exceptional performance on other non-ferrous and ferrous metals. Samples available.

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this particular coating varies from a bluish tone to a pale amber, depending on operating conditions.

This phosphate coating "keys" into the surface crystals of the steel to form a bond with the steel. Also, the phosphate coating is sufficiently matte so that the paint or enamel interlocks with the coating; it penetrates the microscopic pores and forms a lasting bond between the paint and steel surface. The final passivating treatment leaves the surface of the steel passive and prevents sub-paint rusting. As a result, if the painted surface becomes scratched down to the bare steel, there is only a little rusting along the bottom of the scratch in the steel; practically no rusting occurs between the steel and the paint film.

Acknowledgment: Most of the above article appears in an 8-page booklet published and offered free by Frederick Gumm Chemical Company, Inc., Kearny, New Jersey.

Turco Metal Cleaning Book

Turco Products, Inc., 24600 S. Main St., Wilmington, Calif., offers a new 12-page metal finishing brochure titled "Specialized Chemical Processing Compounds for the Metalworking Industry." This illustrated booklet contains specific information for the use of each of the 43 products that make up the company's standard line of cleaning and processing compounds for the metal industry.

For more data, circle 19 on colored card.

Laitsch With Conforming Matrix

Charles Edlund ("Chuck") Laitsch, for ten years metallurgist and manager of engineering for a Grand Rapids firm, has been appointed representative of Conforming Matrix Corp., for Western and Northern Michigan.

Laitsch has an extensive background in the painting of die castings, stampings and injection and vacuum molded products.

Be Nice to Salesmen? Another Side to This

I HAVE READ with a great deal of interest the article, "When A Salesman Calls Be Courteous to Him," by C. Raymond Syer, in the April issue, pages 8 to 12. I agree with many of the things that Mr. Syer mentions in his article and could back it up with hundreds of illustrations in further support. However, there is another side to the story that has been neglected or overlooked entirely.

One of the duties of any purchasing agent is, of course, to interview salesmen. However, he also has much other work to do, and frequently, the amount of time which can be allotted to each phase of his job must necessarily be limited. As an example, take my case.

We are a relatively small organization and my duties as general manager include the buying. Fortunately or unfortunately for us, Bryan, Ohio, is located in a strategic or hub area and, as a result, an unusually large number of salesmen call. Among the three predominant groups are fastener salesmen, paper box salesmen and, of course, paint salesmen. However, let us talk exclusively about paint salesmen.

In practically every case, it is the salesman who insists upon submitting samples; in many cases he requests the privilege of being present at the time his samples are being used and then wants to revamp the entire paint department to

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Can be brushed, sprayed, dipped or roller coated.
Good Mileage! Dries to touch in 15 minutes.

Metal Enamelac
Excellent primer for all metals. Has fabulous adhesion on light metals: Aluminum - Magnesium - Die Casting and Galvanized Iron. Free working sample on request!

Special Offer!
Generous size working sample free. Write on company letterhead, indicate usage and method of application.

HAEUSER'S INC.

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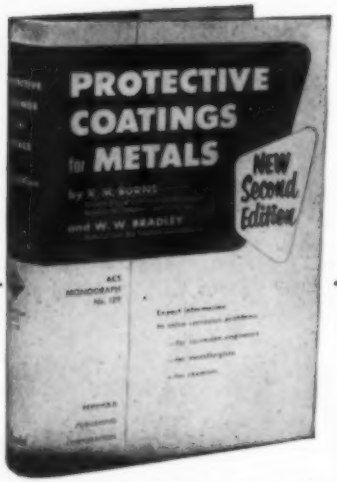

Contains the latest information on the composition, properties, and performance of metallic and organic coatings. New chapters are devoted to inhibitors, chemical conversion coatings, and sprayed coatings. Troublesome phenomena known as "silver migration" and "metallic whiskers" are fully discussed and latest practices in metal cleaning, coating application, and coating testing are explained.

CONTENTS

Principles of Corrosion and Corrosion Control; Surface Preparation for Coatings; Types of Metallic Coatings and Methods of Application; Sprayed Metal Coating; Production and Properties of Zinc Coatings; Protective Value of Zinc Coatings; Cadmium Coatings and Their Protective Value; Tin Coatings; Nickel and Chromium Coatings; Coatings of Copper, Lead, Aluminum, Miscellaneous Metals and Alloys; Coatings of Noble and Rare Metals; Methods of Testing Metallic Coatings; Organic Coatings—Chemistry and Composition; Organic Coatings — Performance and Evaluation; Application and Use of Protective Organic Coatings; Chemical Conversion and Anodized Coatings; Special-Purpose Coatings; Corrosion Inhibitors.

640 Pages . . . Price $12.00

INDUSTRIAL FINISHING

1142 N. Meridian St., Indianapolis, Ind.

make his samples work properly. You may think this is an exaggeration, but I assure you it is not. On those occasions when the samples fail to perform as promised, the salesman then requests the privilege of submitting additional samples and going through the procedure again and again.

In our organization, we do not have an elaborate testing laboratory, and all of this experimenting must be done on the work line, and frequently it is expensive and time consuming.

The principal point of my story is the fact that I do want to be nice to the salesmen, but why can't they realize that when I state we do not want samples, it is an honest statement and not merely a subterfuge to get "rid" of them. In addition to being pleasant and courteous, the salesman should also be understanding as well. I firmly believe there are two sides to every story and that both should be considered.—*Robert H. Eddy, Bard Mfg. Co.*

I was very much interested in Ray Syer's article and the resultant comments from Mr. R. H. Eddy. Ray's conclusion was that no one should request samples unless he intends to give them a fair trial and perhaps an order, although I think most salesmen would settle for the fair trial. However, as Mr. Eddy points out, there are many eager beavers who are insistent on showing their wares, without first getting an understanding of what the prospect will stand to gain.

Some companies fill their salesmen with propaganda, which the product simply will not back up. When it fails, it is bad for all concerned. Also, too many demonstrations are made without proper study of all factors involved. Samples should be obtained of the material that is now working successfully. The chemist or a quali-

fied representative should look over the layout and questions should be asked about every concievable factor that might affect the outcome. Instead, the salesman and his company are usually so eager to grab the account that the demonstration becomes nothing more than a desperate gamble.

My old employers were in that category. The Big Boss used to pressure the salesman, the salesman pressured the lab, and finally the lab yielded to expediency and offered something that was not quite ready for the prospect. Since The Big Boss died, all of the pressure has been removed and, I understand, they are all doing a much better selling job, too. —*K. MacK.*

Quality control is the process by which product-quality information is made available to management.

Long at Diversey's Southern Divn.

P. H. Long has been named a district manager in The Diversey Corp.'s Southern Division. Mr. Long will supervise Diversey sales and sales promotion in Virginia, North Carolina, eastern Tennessee and part of Kentucky.

New Metal Finishing Guide

A 4-page guide, 8½x11-in., contains condensed information on materials and compounds for such finishing operations as buffing, burring, polishing and satin finishing. The Lea Mfg. Co., 16 Cherry Ave., Waterbury 20, Conn.

For more data, circle 20 on colored card.

Synthetic Resins Booklet

A new 12-page booklet describing the physical properties and suggested uses of the firm's full product line has been published by Shawinigan Resins Corp., Dept. DP, Springfield 1, Massachusetts.

For more data, circle 21 on colored card.

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For more data, circle 197 on colored card.

● SUPPLIES
● MATERIALS
● EQUIPMENT

Electric Paint Heating Unit

An electric paint heating unit which will give the smaller finishing departments the finer quality finishes, controlled viscosity, and economy which result from the use of heated material is now available from The DeVilbiss Co., Toledo 1, Ohio.

Designed for use with a single gun —not as a replacement for production-type paint heaters—this new low-cost unit provides a simple and practical heating system where extremely close temperature differentials or high volume delivery of material are not required.

Easy to install, to use and to clean.

It will deliver material to the gun at a pre-set temperature, maintaining the desired viscosity, and provide a better quality finish with less overspray and greater material economy than conventional cold spray, the company states.

Features of the new heater include two independent thermostats. One maintains material temperature at predetermined setting while material is flowing through the heater and spraying is in process. The other automatically maintains a safe "holding" temperature of 120° when the flow and spraying stops. In this way any thermal override is prevented. Once the "limit thermostat" is set for the desired temperature, no further adjustment is required.

A blanket type heating element provides uniform heat with no hot spots warming a thin film of paint which spirals around 220-sq.in. of uniformly warmed transfer surface. The transfer of heat is gradual and safe.

In use, the paint supply from either pressure tank or pump and the spray gun are connected to the heater with standard hoses. For best results, the hose length between the heater and gun should not exceed 15-ft.

The unit is easy to install with a bracket provided for attachment to spray booth or wall, and should be

connected into an AC, 120-volt, lighting circuit. Explosion-proof construction, meeting Underwriter's requirements, permits mounting it inside the spray booth.

Cleaning is accomplished by a simple flushing with solvent.

The heater temperature range is from 150 to 180° F., the rating 1500 watts, maximum paint flow per minute is 25-fluid ounces and minimum 5-fluid ounces. Working pressure is 110-psi.

For more data, circle 1 on colored card.

Heat Cups of Paint for Hot Spray Painting

Thermospray Co., Inc., 155 First St., Mineola, L. I., N. Y., offers a 4-cup receptacle for electrically heating cups of lacquer or paint to be sprayed hot from a cup-gun.

For paint manufacturers the LFK cup heater is excellent when testing paint formulas for hot paint spraying. By using a pressure feed cup with the spray gun, exact control of the paint and atomizing air pressure can be accomplished. Hot spray painting can, therefore, be made under the same conditions as the industrial spray painting which is performed on a larger scale with use of pressure feed tanks or a circulating system.

Because the cup heater accomodates four cups, hot spray painting with different mixtures and viscosities can be arranged. From your test report your customer can see what temperature, paint pressure, air pressure, spray gun nozzle and spray distance that will give the best result for any given type of paint. To measure the atomizing air pressure, a test manometer is connected directly to the spray gun.

In the LFK cup heater the paint cups are not in direct contact with the heating water; the cup heater is completely sealed to prevent any condensation of water vapor in the paint. Even heat distribution over the whole surface of the paint cup eliminates the risk of color change in the cup and prevents local overheating, even when a small quantity of paint is being heated. The atomizing air is preheated by passing it through a pipe immersed in the heating water to insure best atomizing air temperature.

Heating receptacle for cups of lacquer.

For more data, circle 2 on colored card.

Fast Drying Primer-Sealer in Flat White

"Enamelac" is a flat white primer-sealer that dries to touch in 15 minutes and has excellent adhesion to all kinds of wood and most metal surfaces. It is excellent for sealing stained surfaces, especially those that are subject to bleeding. Can be used under lacquers, paints, enamels and

synthetics. Can be sprayed, dipped or roller coated.

It is recommended for use on plywood, wall board, furniture, turnings.

A product of General Chemical Corp., Div'n of Haeuser's, 60 Warren St., Brooklyn 1, N. Y.

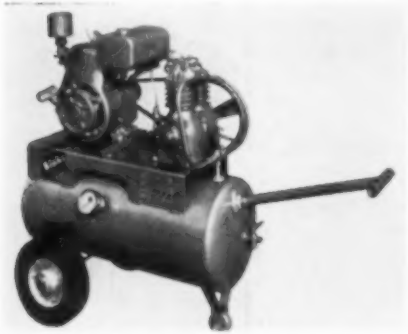
For more data, circle 3 on colored card.

Portable Air Compressors

A new series of tank mounted portable air compressors is offered by Binks Mfg. Co., 3120 Carroll Ave., Chicago 12, Ill., a leading designer and manufacturer of spray finishing equipment. The compressors may be used in spray painting systems and installations, or to fill any general compressed air need.

The new Binks compressors combine the right volume and pressure with an ideally matched big reserve air receiver. They will work continuously on medium production jobs, and are big enough to handle high production intermittent type spray gun and air tool applications. They can also be used to supply inlet air to airless spray units.

The new line comes in four models —two with a one horsepower electric motor, and two with a 2½-hp. gasoline engine. All models provide operating pressures of 70 to 80-lbs. per square inch, and feature a 15-gallon tank. All are designed to give high volume at low cost, and all feature a two cylinder, single stage air cooled compressor unit.



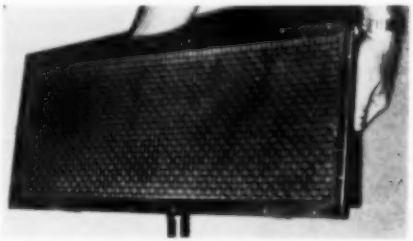
Available in electric motor or gasoline engine drive; completely portable.

Canadian readers should direct their inquiries to Binks Mfg. Co. of Canada, 14 Vansco Road, Toronto, Ontario, Canada.

For more data, circle 4 on colored card.

Catalytic Infrared Heaters

Catalytic Combustion Corp., 4725 Fourteenth, of Detroit 8, Mich., announces a new development in the field of infrared heating—a controllable, flameless, catalytic method of producing low-temperature infrared heat. These new units are suitable for a wide variety of heat transfer requirements—including drying and curing paints and similar coatings, preheating or softening plastics and plastic coatings prior to forming or sealing, etc.



The screen itself is the radiant source.

Gaseous fuel energy is directly converted to infrared heat energy on a catalytically active metal screen; the screen itself is the radiant source. Direct conversion means increased efficiency and lower fuel costs.

Complete and accurate infrared source temperature control is available. Surface temperature of the

Functional Finishes!
If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity . . .
We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.
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THE VARNISH COMPANY
PRODUCTS
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For more data, circle 198 on colored card.

catalyst screen can be set at any point between 800° F. and 1500° F. and held there automatically; temperatures are easily maintained by proportionate control of the gas flow.

The low temperature range permits work to be placed very close to the infrared heat source. Heating times are shorter and size and cost of necessary enclosures can be reduced.

Catalytic I-R heating panels are available in standard sizes, and are readily adaptable for mounting and grouping. Special heater sizes and shapes, designed to satisfy any spot heating requirements are available.

Heaters are designed to provide heat release rates from 2000 to more than 12,000-Btu. per hour per square foot of emission surface. This is approximately equivalent to a range of 4 to 24 watts per square inch.

For more data, circle 5 on colored card.

Coatings Are Tough, Flexible, Durable, Chemical-Resistant

Raffi & Swanson, Inc., announces the development of a new series of chemically reacted finishes, called Durane*. Polyurethanes, epoxies and polyesters are among the new polymers used in these formulations. They offer an unusual combination of desirable properties such as, superior durability, toughness, flexibility, resistance to chemicals and corrosion. In many cases, these properties can be obtained with a room temperature cure.

Durane coatings are offered for a variety of different end uses. Specific formulations that can be applied with most types of standard equipment have been developed for metal, wood, fabric, and paper.

Several users reported that these

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On Finishing Available

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"ALUMINUM PAINT & POWDER" (219 pages)	5.50
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"PROFESSIONAL FURNITURE PATCHING, REPAIRING and APPLIANCE TOUCH-UP" (90 pages)	3.50
"SCIENTIFIC PAINT EVALUATION," (321 pages)	9.00
"FILM FORMATION, FILM PROPERTIES and FILM DETERIORATION" (430 pages)	9.75
"INDUSTRIAL DETERGENCY" (340 pages)	8.75
"SURFACE COATINGS AND FINISHES (299 pages)	9.00

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new coatings offer exceptional properties heretofore unattainable with standard finishes.

A brochure describing this new concept of catalyzed finishes is available upon request from the manufacturer, Raffi & Swanson, Inc., Wilmington, Massachusetts.

*Registered trade name.

For more data, circle 6 on colored card.

Improved Drum Tumbler

Drum tumblers with built-in hydraulic lifts for raising 55-gallon steel drums to proper height for clamping into position on the tumbler, are announced by the U. S. Stoneware Co., Akron 9, Ohio.

The units are a special modification of U. S. Stoneware's standard line of Drum Tumblers, and incorporate the additional feature of a loading platform which can be raised and lowered under control from a 3-way hydraulic valve. The drum to be clamped into the tumbler is placed on the platform inside the holding clamps which are in open position as shown in the illustration. The platform is then raised under power from a separate motor which operates the

Hydraulic lift centers drum for clamping then drops back out of the way.

hydraulic system. When it has reached the proper level for clamping, the clamps are closed and locked around the drum. The hydraulic-lift platform is then lowered, and the drum is rotated by the main motor.

Special advantages of the hydraulic-lift Tumblers are the reduced danger of physical injury to workmen when heavy drums are loaded manually, and the greater speed of drum loading. Use of hydraulic-lift drum tumblers also eliminates from the Tumbler loading operation, the need for lift-type trucks and hoists.

For more data, circle 7 on colored card.

Heat Resistant Decals

Four types of Meyercord's laboratory-developed H-R Transfers are described in a new Sales Technical Bulletin, Number 600. For a copy of Bulletin 600, write The Meyercord Co., 5323 W. Lake St., Chicago 44, Illinois.

For more data, circle 22 on colored card.

Nylon Abrasive Polishing Belt

A new nylon abrasive belt that produces a microfinish in polishing operations never possible before, and that outlasts coated abrasive polishing belts by up to 40 times, has been introduced by the Coated Abrasives Division, Armour Alliance Industries, 16123 Armour St., N. E., Alliance, O.

The new Armour belt has various applications in the metalworking, plastics and woodworking industries. According to Mr. H. W. Schnabel, Product Development Manager, "The product is highly heat and water resistant, does not load-up readily, and excels in applications requiring fine finishes on irregular surfaces."

Armour nylon abrasive belts are made by spraying a slurry of grain (either aluminum oxide or silicon carbide) and a flexible adhesive on a non-woven random fiber nylon web. Next, the web is laminated to a cloth

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- Sealers
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- BETTER LOOKING
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Flock
Decoratively Fascinating
Industrially Proven
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Magic Carpet!
18 BRILLIANT SHADES
Also Black, White, Neutral
Claremont Flock applies easily to glass, wood, paper, metal, fabric or plastic...of any shape or size. Its values are both decorative and industrially functional. Used also for interior finishing, shock-and-sound absorption. Most economical. Instantly available. We, at Claremont, will be very happy upon request, to furnish processing procedures, details, color cards, samples.
CLAREMONT FLOCK CORPORATION
The Country's Largest Manufacturer of FLOCK
CLAREMONT, NEW HAMPSHIRE

For more data, circle 200 on colored card.

backing and then fabricated into an endless belt. Armour nylon belts are available in a variety of grain sizes ranging from coarse to super fine, and in belt lengths to fit any belt sanding machine. They are available in widths up to 24-in.

For more data, circle 8 on colored card.

Electric and Gas Infrared Ovens

Infra-Red Systems, Inc., 240 Route 23, Riverdale, N. J., designs, manufactures and installs infrared ovens in which either electricity or gas supplies the heat source. The merits claimed for their standard and custom built infrared ovens are uniform heat, high efficiency, low maintenance and complete flexibility. Infrared ovens are adaptable to a variety of production setups, with or without conveyors.

For more data, circle 9 on colored card.

New Stromiset Foil Coatings Perfected by Revere

Stromiset, a versatile new line of brilliant coatings for aluminum foil, with a constantly growing list of industrial applications, has been perfected by the Foil Division of Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.

Thermally set, Stromiset coatings are transparent so that the reflection of the lustrous surface of the foil beneath produces a unique effect. Stromisets come in many colors, from light pastels to deep blues, greens and reds. They are highly resistant to the elements, the sun's rays and to alcohol staining. Neither water nor moderate exposure to temperature variations affects their glowing surface.

Stromisets may be bent, cut, flexed, creased or formed. Since they may be used in a variety of ways from

large sheets to almost dust-like specks, they fit many applications.

Some of the fields in which Stromiset coatings are already proving valuable are advertising displays, floor coverings, decorative and acoustical tile, greeting cards, pie plates and tart dishes.

In outdoor displays, multicolored advertisements may be printed over the Stromiset background color to give an opaque design superimposed on bright aluminum foil. This creates an arresting display which will withstand the weather.

For more data, circle 10 on colored card.

Little Giant Airless Spray Equipment

Balcrank Inc., 10 Disney St., Cincinnati 9, Ohio, manufacturer of "Hy-Spray" airless spray equipment, has announced an expanded line of Little Giant portable units.

Little Giant units operate directly

it operates from a 5-gallon container.

AGATEEN

CHAMPION AIR DRY NO. 2 CLEAR LACQUER

For Gold, Brass, Copper and Bronze. A real Lacquer! Better than many bakes. Uniformity of finish and no seeding problem.

Watch following issues for other Champions in our Family of Fine Lacquers.

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Serving Industry Since 1927
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Long Island City, N. Y.
STillwell 4-0660-1

AGATEEN
THE LAST WORD IN QUALITY

For more data, circle 233 on colored card.

SPRAY MASKS

REDUCE YOUR MASKING COSTS BY USING INEXPENSIVE, HEAT RESISTANT

KWIKY-DOTS

A raised edge is automatically provided on each disc for easy grasping. Connected strings of several discs may be removed for fast application. Stock Size: ⅛" up.

NARROW MASKING TAPES

Precision cut to any size from 1/32" up. In standard 60 yd. rolls.

Send for Literature and Samples

BY-BUK COMPANY
4314 W. Pico Blvd., Los Angeles 19, Cal.

For more data, circle 234 on colored card.

from 5-gallon containers. Critical parts of the paint pump are fabricated of stainless steel, permitting the use of water-base paints as well as oil-base paints.

Divorced-type pump construction is incorporated in these units. The pumping cylinder is separated from the air motor head. Paint cannot leak into the air motor and foul the pump or spill paint on top of the container lid.

The air motor operates with a 25 to 1 ratio. The unit contains nitroloy slide valves which are more durable than poppet valves with rubber or composition seats.

Paint agitator and filters with mountings and connections are available as optional accessories.

For further information and an illustrated brochure covering all models of Balcrank "Hy-Spray" airless spray equipment, write direct to the Hy-Spray Division of Balcrank Inc.

For more data, circle 11 on colored card.

Micro-Spray (Airless) Gun Developed by M & E Mfg. Co.

The latest technique in spray painting is to spray without the use of compressed air. And to take full advantage of this fast, efficient method, M & E Mfg. Co., 2571 Winthrop Ave., Indianapolis, Ind., is introducing a new airless Model A-90 Micro-Spray gun which utilizes the many savings possible with this most recent principle.

The new M & E Micro-Spray production spray gun is a heavy-duty type specifically designed for use with any hydraulic paint pump; it can take paint pump pressures up to 2000-lbs. per square inch. In addition to being available with a wide choice of interchangeable spray tips, this light, easy handling airless spray gun has a revolutionary feature which enables the amount of material and the spray angle pattern to be varied while the unit is in operation.

By twisting a control knob mounted on the back of the handle, the position of the fluid needle inside the gun can be altered so it opens or closes the interior orifice which sprays paint through the forward tip. This control knob can cut off the paint entirely, reduce the spray to a fine mist, or produce a heavy coat of material. In varying the amount of material, the angle of spray is automatically reduced or increased, depending on whether the orifice is opened or closed by the fluid needle.

Has aluminum alloy gun body and stainless steel self-aligning fluid needle.

With the airless principle, the paint is drawn up by the high pressure pump and broken into fine particles by being forced through a special Micro-Spray orifice. Total atomization of the paint is acquired by controlling the size of the orifice in the gun, the pressure of the fluid, the velocity of the paint, and the selection of the spray tip.

The Model A-90 is easy to operate. It simply connects to the high pres-

sure hydraulic line leading from the paint pump. Its aluminum alloy gun body contains an adjustable, self-aligning stainless steel fluid needle. And this needle assembly can be removed through a control sleeve in the body. Also, a Teflon needle packing is employed and the fluid needle is shielded in order to assure its exposed portion entering the Teflon packing in clean condition.

Accessories available for the Model A-90 include a Model FT-90 single-tube type connection which gives the operator better control of the equipment, and a Model SS-90 in-line type fluid strainer with swivel connection which has been designed to prevent small paint particles and foreign matter from entering the gun.

For more data, circle 12 on colored card.

Wire Mesh Paint Strainers

Conical in design and of sturdy wire mesh construction, the Strain E-Z strainer is a highly efficient, inexpensive, proved on the job filter that always assures a free flow of paint and completely eliminates cleaning on multi-color work. The flow coat always cleans strainer for subsequent color.

Strain E-Z wire mesh paint strainers; this strainer homogenizes paint and assures an even flow.

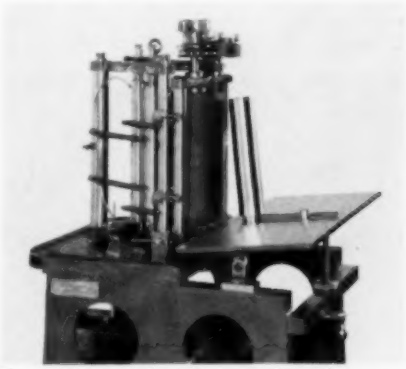
The strainer will fit intake pipes varying from 9/32 to 15/32-in. in diameter. Since the strainer fits neatly inside intake, it is constantly immersed in paint—cannot dry out—adds efficiency to every paint spraying operation.

It has been thoroughly tested in paint shops and has received enthusiastic response. The manufacturer is Strain E-Z Company, 4853 Louise St., Skokie, Illinois.

For more data, circle 13 on colored card.

Tilt-Table Graining Machine

In answer to many requests from users of graining machines, The Hamant Tool Co., Inc., has added a tilting table to one of its upright roller machines. The table and guide roller can be tilted either way—in at the bottom and away at the top, or vice versa. This feature makes the machine more easily adaptable to the graining of mouldings, picture frames and cabinets or parts that have an angular, sloping or tapered surface. Hamant Tool Co.'s address is 512 Warren St., Dayton 9, Ohio.



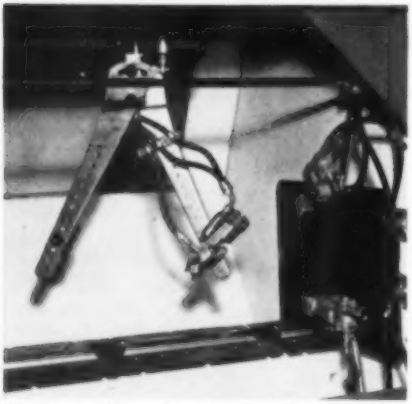
The table is adjustable to tilt either way.

For more data, circle 14 on colored card.

High Speed Automatic Spray

Finish Engineering Co., Inc., 921 Greengarden Road, Erie, Penna., announces the development of a super high-speed rotating spray gun assembly, making practicable production rates up to ten times what was previously possible. The new mechanism, called Roto-Matic Coater, can apply paint over areas in less time than before; production rates of some parts increase in almost direct proportion to the increases in the rpm. of the gun. In most cases, the only variable will be size of the part to be finished. The Roto-Matic Coater produces painted parts at the rate of 10-in. per second when used on the Ride-the-Rod machine. The machine assures perfect coverage in folds, on corners, on ridges, and other hard-to-coat areas.

An alternate assembly combines the Roto-Matic Coater with a "Ride-the-Rod" machine, on which products are mounted on a spinning or stationary rod and moved through the spray booth. This arrangement increases even more the effectiveness of the new coater.



Close-up view of paint booth shows new Roto-Matic Coater. The rotating spray will reach speeds up to ten times the previous operating rate of 50 to 75-rpm. In combination with a conveyor belt, called "Ride-the-Rod," the mechanism will produce painted parts at rate of 10-in. per second.

Tests show that products formerly needing several guns, or passes through a booth, to obtain adequate coverage, can now be completed in one pass. The new gun can be used with almost any type of spray coating, including epoxies, varnishes, and others.

For more data, circle 15 on colored card.

Electronic Air Filter

Type HVSC Electro-cell is a new, completely self contained high-velocity electrostatic precipitator designed for use in inaccessible areas, and for use with air handling units.

The filter is available in 24 sizes ranging from 1000 to 25,000-cu.ft. per minute. One of its advantages is completely automatic maintenance. Washing schedules can be set to meet the needs of individual jobs.

A bulletin No. 258B gives full details and is available upon request from American Air Filter Co., Inc., Dept. PD., 215 Central Ave., Louisville 8, Kentucky.

For more data, circle 16 on colored card.

Hovey Spray Equip. Co. Moves

The Hovey Spray Equipment Co., distributors of industrial finishing equipment and systems, covering Central and Eastern Pennsylvania, New Jersey and Delaware, has moved into a new plant at 1001 Rising Sun Ave., Philadelphia 40, it is announced by Harold R. Schaffer, president of the firm.

Schart; Strathmore Products

Gerald W. Schardt has been named chemical sales and service engineer with Strathmore Products, Inc. He was formerly V. P. of a company in Somerville, N. J. While with that concern, he directed the company's operations in manufacturing, sales, and development of new products for the industrial coatings field.

For Your Convenience

Use INDUSTRIAL FINISHING magazine's "Reader Service" return cards to obtain further information on products described and illustrated in the "Materials; Supplies; Equipment" section which precedes this page; also to receive further information on what manufacturers have to offer—literature, products, supplies, services, etc., as mentioned on the following pages.

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FOR A QUICK RUN-DOWN

On what's the latest in organic finishing operations, read all of the following items about new materials, equipment and services offered by advertisers in this issue.

July, 1961, Issue

Industrial FINISHING

READER SERVICE DEPARTMENT

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Some of the returned cards we receive are not filled in correctly—and we cannot read a few of the hand written names and addresses. Before returning a card, please check to see if it is marked correctly—and legibly, including your name and address. Thank you.—*Editor.*

Tack Cloth for Wiping Dust. It's available in different meshes, in envelopes, rolls or bulk. Lint free, wax free; no danger of spontaneous combustion. Bond Chemical Products Co., 2641 N. Clybourn Ave., Chicago 14, Illinois.

For more data, circle 23 on colored card.

Washers for any Industrial Process can be designed, built and installed to your exact specifications determined by Gallagher-Kaiser engineers. Complete general catalog available on fume and dust removal systems, ovens, spray booths, etc. Gallagher-Kaiser Corp., 6195 Selkirk Ave., Detroit 11, Michigan.

For more data, circle 24 on colored card.

Complete Finishing Systems or miscellaneous parts can be installed in your plant. R. C. Mahon Co. engineers can survey your plant and make recommendations on how you can produce your product most effectively and economically. Typical installations are shown in Catalog A-661, available from R. C. Mahon Co., Detroit 34, Michigan.

For more data, circle 25 on colored card.

Dry-Off Ovens, Bake Ovens, washing machines, Bonderizing units, dip tanks, spray booths, flo-coaters, conveyors, etc., are a few of the many types of finishing equipment offered by Michigan Oven Co., Finishing Equipment Dept., 423 Brainard, Detroit 1, Mich. MOCO Bulletin showing typical finishing system applications and specifications is available.

For more data, circle 26 on colored card.

Paint Overspray can be reprocessed in our plant to conform to its original specification in physical and chemical properties. Paint waste overspray or paint sludge can be used again in regular production at considerable savings. Mixed color sludges can be converted to primers. W. C. Richards Co., 3108 W. Vermont St., Blue Island, Illinois.

For more data, circle 27 on colored card.

Dyna-Spray Airless Painting Units, Model 83417, when mounted on a 5-gallon pail, makes an efficient and economical airless spray painting unit. Is easily portable, can be moved anywhere. Other models available. Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

For more data, circle 28 on colored card.

"Pearl Glo" Synthetic Pearl Pigment can be sprayed or dipped on any sealed surface of plastic, metal, wood, leather, paper, etc. Can also be incorporated into acrylics, polyester, vinyl, etc. Gives a pearl finish at low cost. Sample available. Specify application and choice of vehicle. Argenta Products Co., 74-80 Forrest St., Jersey City, New Jersey.

For more data, circle 29 on colored card.

Gas-Tight, Fog-Proof Goggles for use by paint sprayers and workmen in metal cleaning, grinding and polishing departments. Can be worn with any make respirator or mask. Soft, pliable rubber frames give air-tight fit on any shape face. H. S. Cover Co., South Bend, Ind.

For more data, circle 30 on colored card.

New, Enlarged 2nd Edition

THE NEW enlarged second edition of George A. Soderberg's excellent fast-selling book, "Finishing Materials and Methods" is now ready. It contains 382 beautifully printed pages 6x9-in., 225 illustrations, and is divided into 36 chapters. In the last 12 pages, all subjects in the book are alphabetically indexed. The book is substantially and attractively bound with the front cover design printed in three colors—light blue, black and red.

The first 24 chapters, all illustrated, take up materials—everything used in finishing—paints, varnishes, enamels, lacquers, synthetics, shellac, stains, fillers, bleaches, multicolor finishes, hammer-effect and wrinkle materials, luminescent paints, wax, polish, flock, tack cloth, tape, abrasive paper, varnish remover, etc.

The remaining chapters, also well illustrated, take up all finishing methods, for example, dipping, spraying, flow coating, roller coating, tumbling, electrostatic and drying. One chapter deals with the important subject of color; another offers "Safe and Recommended Practices in the Finishing Department."

Price $5.00—Money Back Guarantee

INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis 4, Ind.

"Spex" Multicolor One-Coat Finish by V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago 39, Ill., gives a combination of two or more harmonizing colors in one coat with standard spray equipment. For finishing wood, metal, plastic, concrete and all types of composition board. Dries like lacquer. Hides surface irregularities. Color card showing assortment of sprayed (not photographed) multi-color combinations available.

For more data, circle 31 on colored card.

Cellulosic, Vinyloid, Acrylic and alkyd coatings for wide range of specialized industrial applications are among the functional finishes manufactured by Varnish Products Co., 5206 Harvard Ave., Cleveland 5, Ohio.

For more data, circle 32 on colored card.

Conveyorized Finishing Systems are flexible, cut labor costs, use less floor space, increase production, give less fatigue for labor. Finishing systems can be engineered for wood and metal products. A Koch finishing engineer will make recommendations without obligation. George Koch Sons, Inc., Evansville 4, Indiana.

For more data, circle 33 on colored card.

"Nacromer" Synthetic Pearl Essence adds sparkle, highlights and richness to an otherwise ordinary coating. Nacromer is compatible with most coating vehicles and can be applied to practically any material by the usual coating methods. 8-page Nacreous Pigment Handbook contains information on natural and synthetic pearl essence. The Mearl Corp., 41 East 42nd St., New York 17, N. Y.

For more data, circle 34 on colored card.

Speedip Centrifugal Coaters for enameling and lacquering uniform or irregularly shaped parts, automatically dip and then spin off all excess coating material. Operations are automatic within the machine. Send sample product to be coated; see how the coater can save you up to 80% in material. Ronci Machine Co., 2 Atlantic Blvd., Centredale 11, R. I.

For more data, circle 35 on colored card.

"Electro-Cold Stripper" will strip vinyls, alkyds, japans, hammers, primers, wrinkles, enamels and epons in minutes. Is non-flammable, requires no heat or current. Complete data and testing sample free on request. Allied Finishing Specialties Co., 2614 W. Grand Ave., Chicago 12.

For more data, circle 36 on colored card.

Non-Grain-Raising Stains, lacquers and everything for finishing fine furniture, cabinets, pianos, etc., plus styling and technical service—in Southeast U. S. A., are available from Snyder Bros. Co., P. O. Box 631, Toccoa, Georgia.

For more data, circle 37 on colored card.

Pre-Cut Masks save masking time. Self-sticking masks for painting and anodizing operations can be die-cut to close tolerances, any size or shape. Stock items and special sizes and shapes available. Free testing samples and literature available. W. H. Brady Co., 733 W. Glendale Ave., Milwaukee 9, Wis.

For more data, circle 38 on colored card.

Industrial Finishes, specially formulated for your production line and products, give your products a salable appearance. For a perfect protective and decorative finish for your purpose, consult the Rockford Varnish Co., Rockford, Illinois.

For more data, circle 39 on colored card.

Strainers for Paints, varnishes, lacquers or enamels. Made with cloth inserts, heavy white paper; all meshes, 6-in. diameter. One-third larger straining area. Sample and price list available. Deborah Sales & Mfg. Co., 32 Vesey St., Newark 5, New Jersey.

For more data, circle 40 on colored card.

Control Paint Overspray the inexpensive effective way. R. P. Paint Arrestors are disposable air filters which trap overspray solids before they reach the exhaust stack, therefore reduce fire hazards, damage to adjacent property, and disagreeable and time-consuming maintenance work. Easy to install, remove and replace in any size or type of booth. Research Products Corp., Madison 10, Wis.

For more data, circle 41 on colored card.

Exposure Test. Actual weathering, corrosion and sunlight tests, direct and under glass for quick predetermination of durability and permanency in southern Florida by South Florida Test Service, Inc., 4301 N. W. 7th St., Miami 44, Fla.

For more data, circle 42 on colored card.

Flock both natural and synthetic, applies easily to glass, wood, paper, metal, fabric or plastic . . . . of any shape or size. Research and laboratory facilities are now available. Details, color cards and samples are available from the Claremont Flock Corp., of Claremont, N. H.

For more data, circle 43 on colored card.

Metaclean No. 268 cleans metal at room temperature. A non-corrosive, alkaline cleaner, it removes oil, chips and other soil from metal. Eliminates fire hazards. Metasurf Corp., 14350 Cloverdale Ave., Detroit 38, Michigan.

For more data, circle 44 on colored card.

Tack Rags for use prior to painting, to wipe off and hold dust and dirt particles too small to see, but which might leave a blemish on the final coat of paint or finish, are available from Ideal Chemical Co., 1499 Dean Drive, South Euclid 21, O.

For more data, circle 45 on colored card.

IDEAL TACK RAGS
FOR A PERFECT FINISH
Bulk, Bagged and Rolls
IDEAL CHEMICAL COMPANY
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For more data, circle 236 on colored card.

GAS-TIGHT! FOG-PROOF!
GOGGLES

PROTECT EYES AGAINST PAINT SPRAY, dust, fumes, gas, smoke, etc. Can be worn with any make respirator or mask. Soft, pliable rubber frames give air-tight fit on any shape face. A few drops of water on inside of lenses keep fog off by a simple nod or shake of head. Sample $2.00 postpaid! Order today!

H. S. COVER COMPANY, Dept. 710, South Bend 14, Indiana

For more data, circle 202 on colored card.

Formulated Finishes by Randolph Products Co., Carlstadt, N. J., can be for bowling pins, typewriters, furniture, toys, plastics, panelboard, etc. Exactly-right industrial coatings by Randolph give your product sales appeal. Finishing problems are Randolph's specialty.

For more data, circle 46 on colored card.

Portable Sanders—electric or air-driven, by National-Detroit, Inc., Rockford, Ill., can be used on wood, metal, plastic, felt, stone and other surfaces. Straight line or orbital action. National sanders produce that smooth surface so essential to a fine finish.

For more data, circle 47 on colored card.

Hardex Clear Lacquers for Brass give high gloss and can be applied by spray or dip; air dry to bake hardness; have good adhesion to polished brass; will not blush nor discolor, remains flexible. Hardex lacquers are made for all metal surfaces. New England Coating Works, Inc., 349 Bryant Ave., New York 59, N. Y.

For more data, circle 48 on colored card.

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P. O. BOX 631 — TOCCOA, GEORGIA

For more data, circle 237 on colored card.

Armorhide Coating is a tough, textured finish resembling leather. Has good abrasion and chemical resistance. Can be applied to assembled metal parts and products; covers all edges making them smooth and free from sharpness. Sprayed and fused on the metal, it is applied at high solids in a thickness of 10-15 mils coating. Armorhide bulletin and sample panel are available. John L. Armitage & Co., 245 Thomas St., Newark, N. J.

For more data, circle 49 on colored card.

Cleaners for Ferrous and non-ferrous metals, burnishing and tumbling; paint stripping; paint spray booth compounds, inter-plant maintenance, are just a few of the many products of DuBois Chemicals, Cincinnati 2, Ohio. Their exclusive, cost-saving 6-point program can help keep your cleaning dollars in balance.

For more data, circle 50 on colored card.

"Kwiky-Dots" Masking Discs reduce finishing cost, increase production, and are heat resistant. A raised edge is provided on each disc for easy grasping. Stock sizes are ⅛-in. and up; also narrow masking tape, 1/32-in. in 60-yd. rolls. Pre-cut spray masks, die-cut masks, caps and plugs can be made to specifications. By-Buk Co., 4313 W. Pico Blvd., Los Angeles 19, California.

For more data, circle 51 on colored card.

"Liquid Envelope" peel-off coating saves time, labor and money. Is non-toxic, won't corrode metal walls or ventilating ducts. Order 5-gallon test sample at drum-lot price. Distributors all over the U. S., or write Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, New Jersey.

For more data, circle 52 on colored card.

RECOVER your Paint Overspray

- REPROCESSED in our plant to conform to its original specification, in both physical and chemical properties, paint waste overspray or sludge can be used again in regular production at considerable savings. Our more than 21 years' experience is customers' guarantee of satisfaction.

PRIMERS—WHITES—COLORS—

- Write for complete details!

Mixed color sludges can be converted to primers.

W. C. RICHARDS CO., 3108 W. Vermont St., Blue Island, Ill.

California Plant: 401 Julianna, Anaheim, Cal.

For more data, circle 203 on colored card.

Synflex Universal Paint Spray Hose is flexible, light and economical. Has abrasion resistance, can be used for hot or cold spraying, has high strength, handles all finishes. Comes in 500-ft. reels. For all of your paint spray hose needs contact Samuel Moore & Co., Synflex Products Divn., Mantau, Ohio.

For more data, circle 53 on colored card.

Guardsman Styled Furniture Finishes are offered by the Grand Rapids Varnish Corporation, Grand Rapids, Mich., emphasizing refreshingly new decorator hues like many toned coffee-walnut, dramatic ebony, rich mahogany and fruitwood cherry.

For more data, circle 54 on colored card.

"Polymac" Polyester Finish is a burn-proof durable low-cost finish. Can be sprayed or curtain-coated; is print free in 50 minutes. Can be rubbed to mirror-gloss, semi-gloss or dull sheen and has glass-like hardness. Can stand severe usage. Polymac finished panels will be sent on request. Lawrence-McFadden Co., 7430 State Road, Philadelphia 36, Penna.

For more data, circle 55 on colored card.

Finishes Consultant, with no supplier affiliations, can give you a 4-day "consulting package." Complete process analysis with detailed equipment specifications can be given. E. A. Zahn, 3502 Hillsboro Court, Louisville 7, Ky.

For more data, circle 56 on colored card.

Instant Stripper—For metal or wood finishes. A non-flammable, non-toxic stripper which removes almost instantly, most finishes—enamels, either lacquer or synthetic (baked or air dried), paints, varnishes, etc. V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago 39, Illinois.

For more data, circle 57 on colored card.

"Flex-A-Prene" Paint Mask affords positive protection against paint spray, according to the manufacturer, Flexo Products, Inc., Westlake, Ohio. This new paint mask keeps out paint pigments and solvents with amazing efficiency. Comfortable fitting and light weight (one ounce).

For more data, circle 58 on colored card.

Paint Strainers for straining lacquers, enamels, paints or varnishes. Made of heavy paper stock with cloth inserts in coarse, medium, fine and extra fine mesh, 6-in. in diameter. Louis M. Gerson Co., Box 175A, Mattapan, Mass.

For more data, circle 59 on colored card.

U. S. PAINT CO.

HOME OFFICE & MAIN PLANT
2101 Singleton, St. Louis 3, Mo.
The Anthony Paint Division • Kansas City
The Martin Varnish Division • Chicago
Warehousing: St. Louis • Chicago • Memphis
• Decatur, Ill. • Kansas City
Sales Representation in principal cities.

For more data, circle 238 on colored card.

For more data, circle 239 on colored card.

FLOW COATING BOOK

Mr. Zahn, the author of "Flow Coating", says that any product which can be dipped or sprayed can be finished by the flow-coat method. His new book contains 296 pages 5¼x7¾-in.; 13 chapters.

The great range in new kinds of solvents now available, plus phenolic-base resin paints and vinyl type paints which have been so successful in the flow coating method of application, presents endless possibilities for profit. The industrial user can now afford to pay a little more for better materials and profit by a higher quality product.

"Flow Coating" explains the various industrial painting methods such as: dipping, spraying, electrostatic, steam, roller coating, centrifugal, hand spraying, automatic dip and many others. Direct comparisons between flow coating and these methods are dealt with in detail.

Mr. E. A. Zahn has spent 25 years in research on industrial paints and application methods. He is the inventor of the Zahn Viscosity Cup, and has acted as consultant to many manufacturing concerns. In 1938 he received the Charles A. Coffin award for contributions made to the electrical industry. Mr. Zahn was associated with General Electric for 25 years and is at present an independent Finishing Consultant.

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INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis 4, Ind.

Steinemann Pressure Curtain Coater applies all finishes uniformly to practically any size or shape of products. There is no waste; unused material is recovered by a recirculating system. For additional information write Wilco Machine Works, Inc., Municipal Airport, Box 3897 IF-7, Memphis 14, Tennessee.

For more data, circle 60 on colored card.

Natural and Synthetic Pearl finishes in air dry or bake coatings for a variety of products are offered by Rona Pearl Corp., E. 21st & E. 22nd St., Bayonne, New Jersey. Apply to metal, plastic, wood or glass surfaces.

For more data, circle 61 on colored card.

Complete Paint Finishing Systems, such as flow coating, dip coating or automatic spraying, metal cleaning and phosphatizing equipment, baking ovens, air replacement systems and conveyors can be engineered and installed by The Spra-Con Co., 3600 Elston Ave., Chicago 18, Ill. Catalog illustrates and describes many installations—small, medium and large.

For more data, circle 62 on colored card.

"New Period" Finishes for both wood and metal are long lasting and easy to apply. Fillers, stains, lacquers, sealers, lacquer enamels and synthetic enamels are among the finishes available. Working samples at drum price. New York Woodfinishers' Supply Co., Inc., 109 Imlay St., Brooklyn, New York.

For more data, circle 63 on colored card.

Chemical - Resistant Baking Enamels by Standard T Chemicals Co., 2600 Richmond Terrace, Staten Island 3, N. Y., are resistant to sulphuric and hydrochloric acids, sodium hydroxide, and other chemicals that may come in contact with the metal surfaces.

For more data, circle 64 on colored card.

Electric Knife Heaters and Burn-in Tools for making quick and skillful repairs to nicked, dented or scratched finishes. The Op-Al Electric & Mfg. Co., 3133 Martindale Ave., Indianapolis 5, Indiana.

For more data, circle 65 on colored card.

Polymerin Finish by Interchemical Corp., Finishes Divn., 224 McWhorter St., Newark 5, N. J., is durable and has resistance to impact, abrasion, perspiration, alkalies and detergents. Office equipment finished in Polymerin stands the tests of time.

For more data, circle 66 on colored card.

SYNTHETIC
PEARL ESSENCE

RONA™ FOR
PEARLESCENT FINISHES
BAKE OR AIR DRY
For Your Product Made of Metal, Plastic, Wood or Glass,
Write for sample, Specify application; choice of vehicle.
RONA PEARL CORPORATION
A Division of Rona Laboratories, Inc.
East 21st and East 22nd Sts., Bayonne 2, N. J.
Plants: Maine New Jersey Canada

For more data, circle 204 on colored card.

Heavy-Duty Roller Coaters by The Black Brothers Co., Inc., Mendota 12, Ill., apply paints, lacquers, sealers, sizes, stains, waxes, fillers, base coats, etc., to wood, metal, plywood, composition board, hardwood, plastic, etc. Have speed, accuracy, cleanliness and economy.

For more data, circle 67 on colored card.

Drum Plug Wrench; steel or bronze, fits 95% of plugs or bungs in steel drums. Morse Mfg. Co., Inc., 763 W. Manlius St., East Syracuse, New York.

For more data, circle 68 on colored card.

"Dulux 100 Enamel" resists blistering, chipping and cracking despite hard wear and temperature extremes. By actual tests, Dulux 100 holds its luster three times longer than former outside enamels. Is hard, tough and mar-resistant. Recommended for vending machines for outdoor use. The DuPont Co., 2502 Nemours Bldg., Wilmington 98, Dela.

For more data, circle 69 on colored card.

"Spray Nozzles for Metal Cleaning and Coating" is the title of a new bulletin now available from Spraying Systems Co., 3240 Randolph St., Bellwood, Illinois. Bulletin 106 includes spray nozzle reference chart covering every application. Copies are free.

For more data, circle 70 on colored card.

Operation "Curtain Coater" is the newest addition to Spruance Advanced Research. New finishes are tested, custom finish service has been extended and new techniques developed. Spruance Advanced Research is at your service. Curtain Coating details and coatings for this process are available. The Gilbert Spruance Co., Philadelphia 34, Penna.

For more data, circle 71 on colored card.

For more data, circle 240 on colored card.

Electric and Gas Infrared Ovens provide uniform heat, heat is transmitted directly to the work, no bulbs or tubes to burn out or break, and are adaptable to any conveyor or system. Copies of "The Story of Modular Infra Red Ovens" free upon request. Infra-Red Systems, Inc., 240 Route 23, Riverdale, N. J.

For more data, circle 72 on colored card.

Appliance Finishes by Cook Paint & Varnish Co., Kansas City, Missouri, provide beauty and sales appeal to household appliances. Let a Cook salesman help you add buy appeal and production economies to your products.

For more data, circle 73 on colored card.

White Baking Enamels are just one of the many "tailor-made" finishes available from Gilman Paint & Varnish Co., Chattanooga, Tenn. All types of finishes for metal can be formulated for your specific problems and products.

For more data, circle 74 on colored card.

Champion Air Dry No. 2 Clear Lacquer is a finish for gold, brass, copper and bronze. Gives uniformity of finish and no seeding problem. Agate Lacquer Mfg. Co., Inc., 11-13 43rd Rd., Long Island City, N. Y.

For more data, circle 75 on colored card.

Hot Airless Spray System by Nordson Corporation, Amherst, Ohio, is said to cut paint waste by old-fashioned spray systems 25% or more. No air is used for atomization so overspray is cut to a bare minimum. Send for the Nordson brochure, free.

For more data, circle 76 on colored card.

Saf-T-Enamels are being applied on production lines by electrostatic or conventional hot or cold spray. These enamels are available in all colors, various gloss finishes and in metallics. A bronzing liquid or vehicle to be used with bronze powders is also available. U. S. Paint Co., 2101 Singleton, St. Louis 3, Missouri.

For more data, circle 77 on colored card.

Forlon Rust Remover cleans metal and strips paint all at once. This heavy-duty alkaline cleaning and derusting compound removes rust, paint, oil and grease from steel and cast iron. Will not injure sound metal and will not etch. Wyandotte Chemicals, Wyandotte, Mich.

For more data, circle 78 on colored card.

Uni-Clad Aluminum Finish can be applied by dip or spray application; in clears, colors, flat or gloss. Has flexibility and will not chip or peel. Is resistant to salt-spray, chemicals and humidity. Good performance on other ferrous and non-ferrous metals. Samples available. Universal Paint & Varnish, Inc., Box 199, Bedford, Ohio.

For more data, circle 79 on colored card.

"TOMORROW'S Products Tested TODAY"®

A service to aid industry in producing longer-lasting and better-looking products. Quick predetermination of durability and permanency by actual exposure test in South Florida. Write us today for full information.

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® Reg. U. S. Pat. Off.

For more data, circle 241 on colored card.

Hamant's DDV-2 Grainer can apply two colors in close register, on both sides simultaneously. Doors or panels can be printed at a very low cost. This graining operation makes run-of-the-mill panels as beautiful as selected panels. The Hamant Tool Co., Inc., 502 Warren St., Dayton 9, Ohio.

For more data, circle 80 on colored card.

Appearance Problem? Whatever your special finishing problem, the service of Hydrosol's laboratory and staff is available to help solve it with a custom formulated finish to suit your exact needs. Hydrosol, Inc., Cicero, Illinois.

For more data, circle 81 on colored card.

The Ransburg No. 2 Process increases paint mileage and improves quality. Information on the Ransburg No. 2 Process and the No. 2 Process Electrostatic Hand Gun, which can be used in either conveyorized or non-conveyorized painting, is available. Ransburg Electro-Coating Corp., Box 23122, Indianapolis 23, Ind.

For more data, circle 82 on colored card.

"Why Hot Spray?" is the title of a free booklet issued by The Spee-Flo Co., 6614 Harrisburg, Houston 11, Texas, which gives the merits of hot spray units. On-the-job demonstrations can be arranged. Hot spraying gives greater coverage, stops blushing, orange peel and sag and lowers the finishing cost per unit.

For more data, circle 83 on colored card.

Chosen by 17 Coating Labs . . .

Steinemann ***Pressure Curtain*** **COATER**

Yes, 13 paint, 4 hot melt suppliers, selected Steinemann for research and sales. The reason—more Steinemanns are in use than all others combined, and Steinemann operates with exclusive *pressure curtain* and gravity curtain. This lab versatility is significant. Now, Steinemann is even better—with completely redesigned lab and production machines.

wilco machine works, inc.

P. O. Box 3897IF-7 Memphis 14, Tenn. WH 8-4555

For more data, circle 205 on colored card.

"Uni-Vac" Vacuum Metalizing is efficient, economical and durable. Can be sprayed or dipped. Has resistance to abrasion and moisture, high-build and compatability with colored dyes, is flexible and retains maximum hardness and toughness. Free sample and literature available. United Lacquer Mfg. Corp., Linden, New Jersey.

For more data, circle 84 on colored card.

Monark Hydra-Spray by Gray Co., Inc., 73 Graco Square, Minneapolis 13, Minn., is a low-cost 5-gallon airless unit. Can be used for multi-color work. Airless operation eliminates overspray and bounceback, saves time and materials. Works direct from one or 5-gallon containers.

For more data, circle 85 on colored card.

Water-Dip Lacquer, clear metal and wood lacquers, lacquer enamels and synthetic coatings, are just a few of the dependable finishes by G. J. Nikolas & Co., Inc., 2850 Washington Blvd., Bellwood, Ill. Information, samples and recommendations available.

For more data, circle 86 on colored card.

Oakite 161 Alkaline Detergent removes identification inks, grease, oil, shop soils, etc., and gives a clean surface for inspection or final finishing. Its extra-long solution life and low concentrations assure low per-unit production costs. Bulletin F-9773 available on request. Oakite Products, Inc., 32F Rector St., New York 6, New York.

For more data, circle 87 on colored card.

Alemite Versatal Low Pressure Pumps provide continuous flow of material under the most difficult operating conditions. Versatal Model 7884-A Pump can serve 2 miles of pipeline. Can pump from 55-gallon drums or paint vats. Many models of heavy-duty pumps available. Stewart-Warner Corp., Dept. BQ-71, 1850 Diversey Parkway, Chicago 14, Illinois.

For more data, circle 88 on colored card.

Ovens for Baking, Drying and Dehydrating, with gas, electric or steam heat, can be supplied by The DeVilbiss Co., Toledo 1, Ohio. Features include prewired and prepiped control panel; powered exhaust, interlocking oven panels. Ovens are of extra-heavy construction for even heat distribution. Let the DeVilbiss engineering ability and experience assure you of the best oven for your purpose.

For more data, circle 89 on colored card.

Super Nubelite thermosetting acrylic finish cuts paint bake time in half. One-coat Super Nubelite finishes are available for refrigerators, freezers, and fluorescent light fixtures. Two-coat finishes are being used on washers, dryers and other electrical appliances. Complete information on both the one-coat and two-coat finishes available. The Glidden Co., Industrial Paint Divn., 900 Union Commerce Bldg., Cleveland 14, Ohio.

For more data, circle 90 on colored card.

STRAINERS

For Paints, Varnishes, Lacquers or Enamels

Made with cloth inserts — heavy white paper — all meshes — 6-inches in diameter — single leg. One-third larger straining area.

Write for sample and price list!

DEBORAH SALES & MFG. CO.
32 Vesey St., Newark 5, N. J., Phone MA 2-8166

For more data, circle 242 on colored card.

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FINISH
for every purpose

Electronic Equipment • Appliances • Office Equipment • Furniture • Sports Equipment • Toys • Lighting Fixtures • Plastics • Panelboard

. . . formulated with the high quality and exact suitability developed by more than a quarter-century of experience!

WE DELIVER PROMPTLY.

Need help with finishing problems? Just write us.

Randolph
PRODUCTS COMPANY
CARLSTADT, NEW JERSEY

For more data, circle 243 on colored card.

Color Planning

for business and industry...

How to use color effectively, economically and profitably in your factory, office, products, packaging, displays, stores, advertising, home—everywhere. This information is presented in easy-to-read style by a man who has been a color specialist for 30 years, Mr. Howard Ketcham.

A few of the subject divisions in the book: How to plan the colors for your product, color for better marketability, new color in place of new design, how many colors, hints on color and design, where does product color go from here, color and safety, some easy rules to follow, what color can do for you, which type of light, how camouflage works, the uses of color through the ages, etc.

As Director of the Color Advisory Service of the DuPont Co. back in 1932, Mr. Ketcham created the original Duco automobile colors, and his color plans were featured in more than 70% of U. S. automobiles. He also introduced the first market testing procedures for predetermining consumer color preferences. After World War II he color-designed everything from packages, products and trademarks to homes, stores, trucks, railroad cars and even jets. In three years alone, A. T. & T. sold 10 million of his colored telephones, and U. S. Steel hired him to modernize and reduce (from 40 to 9) its color line which contributed to the company's 40% increase in sales that year.

The book contains 282 pages, including 8 color plates, 6¼x9½-in., is divided into 19 chapters, contains an alphabetical index and table of contents, and is substantially bound in heavy stiff covers of black and light blue letters in red and gold. To leaf through this remarkable book you would estimate it to cost at least ten dollars, but actually the retail price is only $5.95, postpaid.

INDUSTRIAL FINISHING

1142 N. Meridian Street Indianapolis 4, Ind.

AG Paint Arrestor Pads catch and hold paint. These white fiberglas pads are non-clogging—less "drag" on your fans. Their holding capacity keeps your spray booths cleaner and cuts maintenance upkeep. American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

For more data, circle 91 on colored card.

Alcoa Aluminum Pigments are available in a wide range of metallic finishes that give extra protection and help build sales. Facts on these aluminum pigments and their uses are available from Aluminum Co. of America, 1757-G, Alcoa Bldg., Pittsburgh 19, Pennsylvania.

For more data, circle 92 on colored card.

Pyroxcote Plastisols are engineered vinyl dispersions that can be applied by dipping, casting, spraying or spreading. Fused by heating, the resulting plastic coatings may be thick or thin, colored or colorless, dense or porous, depending on your specific requirements. Pyroxylin Products, Inc., Paoli, Penna., and Chicago 32, Illinois.

For more data, circle 93 on colored card.

Buton 200 Resin offers good corrosion resistance and saves in cost. Buton-based primers have good adhesion, flexibility and impact resistance. Samples and a booklet on Buton Resins for metal primers is obtainable. Enjay Chemical Co., 15 West 51st St., New York 19, N. Y.

For more data, circle 94 on colored card.

Primer, Sealer, Stain Killer. "Enamelac Flat White" air dries to touch in 15 minutes; for plywood, wall board, furniture, turnings, etc. Prevents bleedthrough. For interior and exterior service under any finish coats. Also excellent primer for all metals. Haeuser's Inc., 60 Warren St., Brooklyn 1, New York.

For more data, circle 95 on colored card.

Spray Mask Painting Machines, spray mask washing machines, finishing equipment and custom units for special finishing, as well as spray masks, jigs and fixtures, are supplied by Thierica Studio, 900 Clancy, N. E., Grand Rapids 5, Mich. Send part, print or sample, and special attention will be given to your particular masking or finishing problem. Special masking and special tooling can be designed for your product.

For more data, circle 96 on colored card.

"Gripalloy" Primer for 25 Metals is available in black and colors; excellent adhesion . . . and resistance to salt spray and solvents. Cuts pre-treatment costs in half. Tenax Finishing Products Co., 390 Adams St., Newark 14, N. J.

For more data, circle 97 on colored card.

Spraying Units, automatic or manual, high-speed and low pressure, are available from Eclipse Air Brush Co., 400 Park Ave., Newark 7, N. J. Automatic coating machines, Auto-Rod, exhaust equipment, dry or waterwash spray booths, and the Spray-Rod, are just a few of the pieces of equipment available.

For more data, circle 98 on colored card.

Clearcopper, Clearbrass and Clearchrome by Cosden Paint Co., Beverly, N. J., are three non-fading finishes for use on light fixtures, etc. Can be applied by hand spray, dipping and electrostatic systems and conform to high conveyor speeds and fast bakes. Inquiries on finishes and application methods given prompt attention.

For more data, circle 99 on colored card.

"Uni-Finisher" applies a light abrasive action to metal, wood or plastic sheets. Can be used for metal polishing operations, sealer and filler coat sanding and polish sanding. Machine can be supplied as integral part of automatic conveyorized finishing system. The Union Tool Corp., 818 N. Detroit St., Warsaw, Ind.

For more data, circle 100 on colored card.

New Savings in Enamel Paint Spraying. A new system for spray painting, using Hi-Sol Enamel reducer, produces savings up to one-third, according to Potter Paint Co., Inc., Cortland, N. Y., and Cambridge City, Ind. The H.S.R. System (Hi-Sol Reducer) lowers the cost per gallon of ready-to-use mix by using more of the special reducer with less air pressure. Puts more paint on the product—less on the booth. The special Hi-Sol Reducer increases coverage per gallon at required mil thickness and achieves desired finish quality, according to the manufacturer.

For more data, circle 101 on colored card.

"Coritex" Leather-Like Finish is abrasion-resistant, covers imperfections in moldings and castings, and is easily cleaned. Can be sprayed by conventional methods or electrostatically. Available in black, white and all colors. Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.

For more data, circle 102 on colored card.

HARDEX
CLEAR LACQUERS for BRASS

- High Gloss — Spray or Dip.
- Air Dries to Bake Hardness.
- Amazing Adhesion on Polished Brass.
- Will not Blush-Tarnish nor Discolor.
- Hardens with Age.
- Remains Flexible.

HARDEX Lacquers are made for All Metal Surfaces.

Convince yourself — order Trial gallon at Drum price!

NEW ENGLAND COATING WORKS, Inc.
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349 Bryant Ave. New York 59, N. Y.
Tel. DAyton 9-7800

For more data, circle 244 on colored card.

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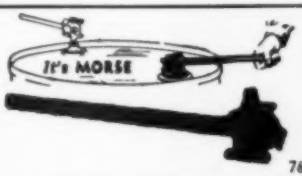
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs.
Order 1 or more today!



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SATISFACTION GUARANTEED..... $4.10
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Plus Parcel Post
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763 W. Manlius St., E. Syracuse, N.Y.

For more data, circle 206 on colored card.

Vines, V. P. of Sales for Phillips

Phillips Mfg. Co., Chicago, announces the appointment of Mr. George W. Vines to fill the position of Sales Vice President.

Mr. Vines has spent 15 years in Engineering and Sales Development work in the structural steel and chemical process industries and has recently specialized in nuclear equipment and missile launching facilities. His appointment follows the recent announcement of Phillips' new expansion program which not only encompasses new manufacturing facilities but also, several new product lines, some of which have already been introduced.

Clancy, an Asst. Sec. of DuBois

Francis J. Clancy has been appointed an assistant secretary of DuBois Chemicals, Inc. Mr. Clancy joined DuBois in 1959 and is presently serving as manager of the Company's Los Angeles plant, a position he will continue to hold. He has had 15 years of experience in accounting and auditing prior to joining DuBois.

A Timken Roller Bearing Co. employee uses conventional spray equipment to paint a fork lift truck in the company's specially designed paint booth. Water, falling in the background, filters out the paint mist and forces it into a water tank where the paint is separated from the water by filter screens. The water is then recirculated.

Diversey in Downtown Chicago

The Diversey Corp. has moved its general offices, research and development laboratories, and Central Division Sales Offices to a modern 5-story air-conditioned building in downtown Chicago.

The building, located at 212 W. Monroe St., was formerly occupied by the Chicago office of the FBI. Diversey's former quarters were at 1820 W. Roscoe St.

Diversey produces specialized cleaning compounds for the metal industries.

A. L. Wilcox Named Blakeslee Detroit Representative

G. S. Blakeslee & Co., Chicago, Ill., has appointed Arnold L. Wilcox as new sales representative, for the company's line of vapor degreasers, metal parts washing machines and degreasing solvents.

Before joining Blakeslee, Mr. Wilcox was associated with a water conditioning concern, where he was in charge of sales engineering for the state of Michigan.

Color Card of Coding Enamels

This color card has actual chips of 18 popular colors of Reynolds new fast-drying spray-type enamels used for: 1) Color coding inventory stocks and work in process; 2) Identifying piping, electrical connections, fire and water valves, etc.; 3) Directing the inter-plant routing of all materials, and all other color coding operations. For a free color card write Reynolds Ink, Inc., 2075 E. 65th St., Cleveland 3, Ohio.

For more data, circle 103 on colored card.

Briggs Joins Nordson Southern

Mr. Neil Briggs has been appointed a sales-service representative of Nordson Southern Inc., a sales subsidiary of Nordson Corp., Amherst, O., manufacturer of airless spray coating systems.

Mr. Briggs is well known in the finishing field in the Southeastern area. He was for-

merly with two nationally known paint companies in various sales capacities. He has completed extensive factory training at the Nordson factory in the use and maintenance of airless spray painting equipment. This training, combined with his extensive knowledge of finishes, gives Mr. Briggs a background which will be of great value to Nordson customers.

Hydra Airless 30 Bulletin

A 4-page (8½ x 11-in.) 2-color bulletin illustrates and describes the full line of airless painting equipment now offered by Spee-Flo Co., 6614 Harrisburg, Houston 11, Texas. This includes the H-Gun (total atomization), non-circulating and heated circulating equipment, pumps, heaters, stirrers, strainers and many accessories.

For more data, circle 104 on colored card.

"Foam" Cleans Equipment

"Foam!" is the name of a 4-page pamphlet that explains the new technique of cleaning industrial equipment, utilizing lightweight foamed solvent for greater efficiency and economy. Dow Industrial Service, 20575 Center Ridge Road, Cleveland 16, Ohio.

For more data, circle 105 on colored card.

Automatic Spray Coating

An automatic spray coating machine for rapid, continuous finishing of electrical and electronic components having axial leads, is described in a new brochure now available from Conforming Matrix Corp., 765 New York Ave., Toledo 11, Ohio. Known as the Model HD-3, the machine is available with automatic magazine loader attached and automatic tray loader.

For more data, circle 106 on colored card.

Tarnowski, Asst. Sec. of DuBois

Richard A. Tarnowski has been appointed as assistant secretary of DuBois Chemicals, Inc. Mr. Tarnowski joined DuBois in 1959 and is presently serving as manager of the Company's East Rutherford, N. J. plant, a position he will continue to hold. He has had 20 years experience in management prior to joining DuBois.

Burn-in Repair Patches

FOR MAKING minor repairs on natural finished hardwood furniture, a shellac or lacquer stick is generally used by the so-called burn-in process. These sticks are obtainable in a wide variety of colors to match the finished wood surface that is to be repaired. Various sizes and shapes of dull-edged knives are heated—usually with an electric heater; then the proper knife is selected and held against the shellac or lacquer stick to melt off a small amount so it drops into the scratch or crack in the wood surface. This hot material is quickly pressed into the defect and the surface is smoothed out with the flat side of the knife.

The patch material cools and hardens rapidly; then the patch is sanded smooth. Pores or grain lines are drawn in by hand so that the patch matches and blends in with the surrounding finished area. An expert repair man can burn-in and touch-up a defect so that it cannot be detected in the finished piece—except possibly by very close examination.

One word of caution is in order. Care must be exercised in the use of shellac or lacquer stick repairs if the finish on the furniture is force-dried later at temperatures above 125° to 135° F., especially if the patch is applied to vertical surfaces. At elevated temperatures shellac and lacquer will soften or melt; this could cause sags where patches have been made on the fronts and sides of furniture.

Until such time arrives when manufacturers of these sticks develop a stick that will resist temperatures up to 175° to 185° F., those pieces that have vertical surface repairs will have to be taken out of regular production line and force dried for longer periods of time at lower temperatures.—*B. C.*

Spray Paint Masks, vacuum plating racks, jigs, fixtures, tools and equipment are available from Accurate Finishing Tools Co., 2631 W. 12th St., Erie, Penna. Send parts or prints for quotations. Highly competent engineering techniques and prompt delivery on all orders.

For more data, circle 107 on colored card.

POSITION WANTED.

Experienced Industrial Paint Salesman available for a better opportunity. Has experience in all phases of the industry. College graduate. Will relocate. Address IF-856, care Industrial Finishing.

HELP WANTED.

Supervisor for Finishing Department. Must be capable of mixing colors and get out quality production through good supervision. Central Wisconsin location. Well financed company. Give experience details and salary expected in first letter. Address IF-857, care Industrial Finishing.

FURNITURE FINISHES CHEMIST WANTED.

Knowledge of formulation of lacquers, conversion varnishes and alkyd resins required. Top pay and fringe benefits. PERFECTION PAINT & COLOR CO., Indianapolis 2, Indiana.

CLASSIFIED ADVERTISING

The rate on ads appearing in this department is $1.00 per line of 6-pt. light face type, per insertion. Minimum charge, $5.00. Adds set in 8-pt. extra bold face type cost $2.00 per line, per insertion.

There may be certain firms or individuals to whom you do not want your reply sent. Simply address your communication to the box number in the ad and attach a separate list of names. Place both in a separate envelope addressed to Industrial Finishing Magazine, 1142 N. Meridian St., Indianapolis 4, Ind. If the advertiser is on the list you submit we will then destroy your letter. Names of advertisers using box numbers not revealed.

PAINT CHEMIST WANTED.

Experienced industrial finishes formulator needed for our expanding sales and research program. Background in synthetic baking and specialty finishes required. Excellent working conditions. Please reply with personal qualifications and experience. All information will be held in strict confidence. COSDEN PAINT CO., Cherry St. and Lee Ave., Beverly, N. J.

RESEARCH AND DEVELOPMENT CHEMISTS

Expansion of our Research and Development facilties in Chicago offers a number of exceptional career opportunities for experienced chemists with strong backgrounds in industrial finishing field. The positions available assure excellent opportunities for advancement, compensation, and employee benefits.

ENAMELS FORMULATOR

Fine opportunity for growth and responsibility in enamels formulating group specializing in appliance enamels. Minimum of B. S. in Chemistry and three years' experience in appliance formulation.

POLYESTER RESIN CHEMIST

Extensive experience in polyester development and resin formulation required. Minimum B. S. in Chemistry. Unusual opportunity for advancement and responsibility.

If you are interested in challenging work under most favorable conditions, submit resume of education and experience with assurance that all replies will be held in strict confidence.

R. L. MALCOLM
THE GLIDDEN COMPANY
900 Union Commerce Bldg., Cleveland 14, Ohio

SALESMAN WANTED.

We have an opening for an energetic industrial finishing salesman. This company is old in grace but young with drive and ambition. If you can do a job with our finishes you are the man we want to talk to. Address IF-853, care Industrial Finishing.

INDUSTRIAL FINISHES SALESMEN.

Expansion of our sales and research program results in openings for experienced industrial finishes representatives. Eastern seaboard area. Salary and commission. Please reply with personal qualifications and experience. All information will be held in strict confidence. COSDEN PAINT CO., Cherry St. and Lee Ave., Beverly, N. J.

SALESMEN WANTED.

Progressive manufacturer of industrial coatings has openings for outstanding salesmen in New York area, New England, South Eastern states, Ohio, Pennsylvania and many other lucrative areas. In addition to up to date wood and metal finishes our line extends into vinyl printing inks and adhesives for fabric and plastic laminating. Extremely close cooperation between each salesman, technical director and top management. Submit resume of background and experience. Replies held in strict confidence. Address IF-850, care Industrial Finishing.

PAINT SALESMAN WANTED.

Old established industrial finishes company located in Newark, N. J., wants an experienced salesman with a following in this field. We are ready to turn over a sizable number of house accounts to the right man. Salary and commission. Give complete background in first letter. All replies will be kept in strict confidence. Address IF-765, care Industrial Finishing.

DIRTY THINNERS AND SOLVENTS WANTED.

Send samples and letters giving approximate contents. GET CASH FOR SCRAP. THE JOHANN COMPANY, 13900 Grant St., Dolton, Illinois. Phone Dolton 4850.

WANTED.

Dirty solvents and thinners. Please send samples. Have clean reclaimed solvents for sale. Modern efficient solvent recovery service. Will process for customers, material at fraction of the original cost. ACME RECLAIMING, Inc., 1915 20th Ave., Rockford, Illinois.

LET US COAT YOUR SMALL PARTS
¼-MM to 35-MM SIZES

Specialists for coating smallest of items from ¼-mm to 35-mm size; any shape, round, flat, solid or with holes, and any material, plastic, glass, wood, etc. Production methods at low cost. Any color or shade or protective coating desired.

New exclusive processes by reliable manufacturer with fifty years' coating experience. Address IF-854, care Industrial Finishing.

FOR SALE.

12-ft. Gasway strip coating line complete with 5-stage cleaning and treating tanks. Address IF-855, care Industrial Finishing.

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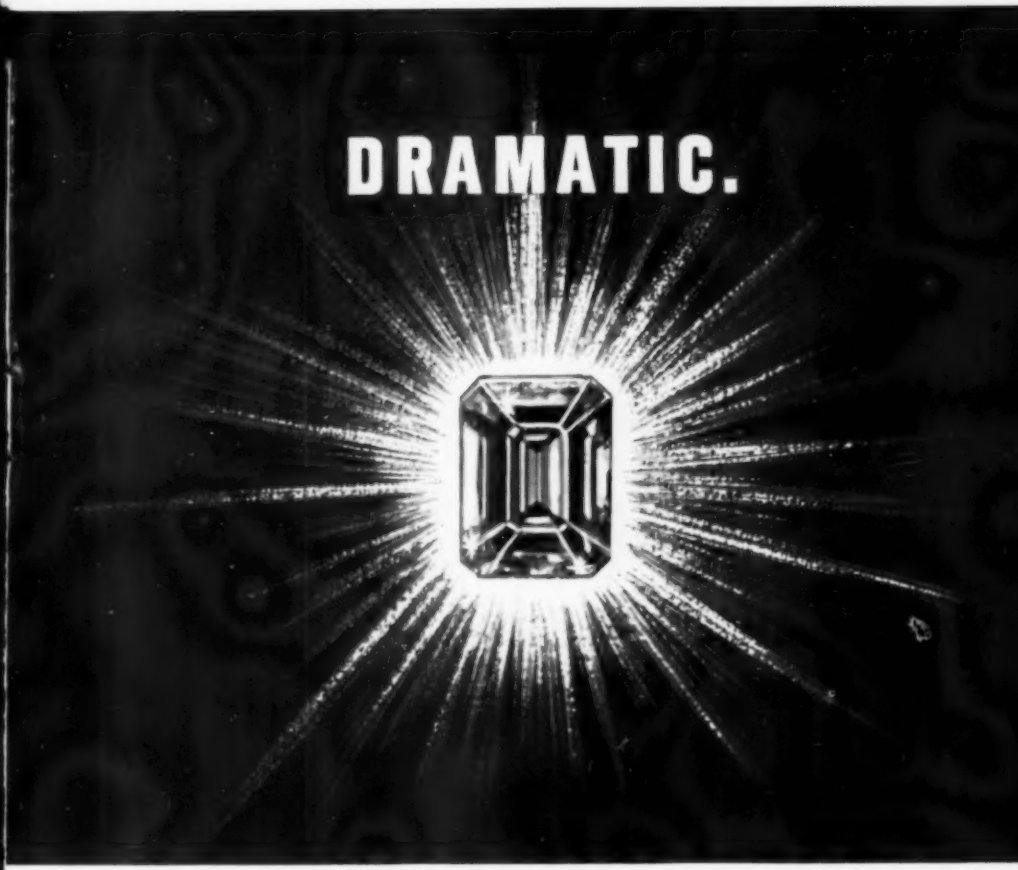

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United's Uni-Vac Vacuum Metalizing is a plater's best friend . . . efficient, economical, durable . . . as a dramatic topcoat or the perfect bonding basecoat. A shining example of versatility, it gives a perfect finish to metal, plastic, cloth or glass. Whether you spray it, bake it, or dip it, Uni-Vac assures flexibility, resistance to abrasion and moisture, high-build and compatability with colored dyes. Because of its superior adhesion properties, your product finish retains maximum hardness and toughness. Advantageously Low-Priced to meet your competitive market. Write for free sample and literature today! Ask about our Free Technical Consultation Service!

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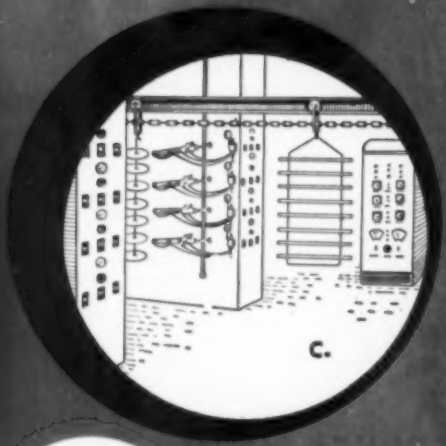
d. **SPRAY-ROD** — Entirely new design hand spray production gun. Better atomization, greater handling ease and operator convenience.



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